TELEPHONY

JUL 11 '52

JULY

5, 1952

Vol. 143—No. 1

Published every week on Saturday by TELEPHONY PUBLISHING CORPORATION, 608 So. Dearborn St., Chicago 5, Ill. Subscription $3.50 per year. Entered as second class matter at the Post Office at Chicago, Ill., under the act of March 3, 1879.

THE JOURNAL OF THE TELEPHONE INDUSTRY

All the flexibility and dependability of **XY**

Now available in 3 standard types for private Dial Branch Exchanges

STROMBERG-CARLSON XY-PBX

The acceptance and ever-growing selection of the XY System for Central Office use is now known all over America—since no technique of dial-switching has enjoyed such a "trend" as has XY, these past few years.

Stromberg-Carlson now offers to operating companies their choice of three XY Systems for Private Branch Exchanges. The advantages of such service are numerous—and three seem to merit special emphasis:

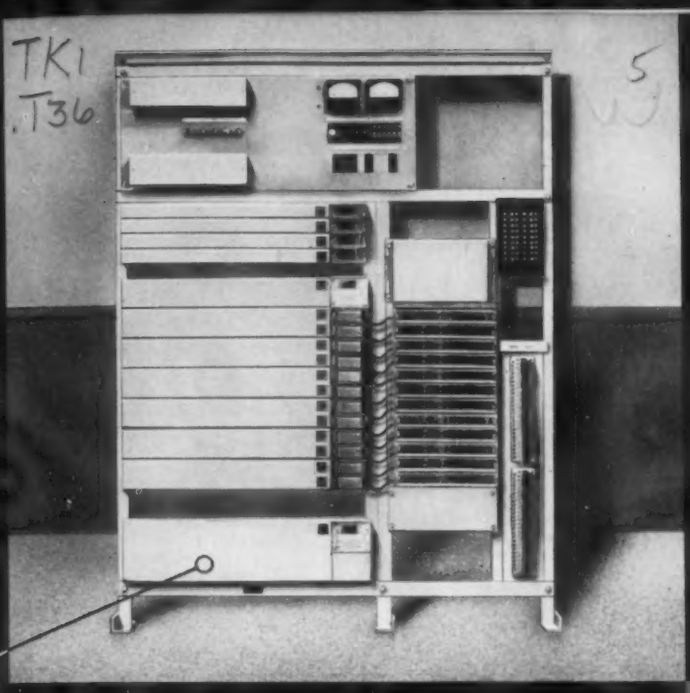
1. Companies already using XY service in their CDO equipment will be using the same switches in PBX installations.
2. Companies not presently employing XY will find that these PBX systems offer increased revenue . . . and at the *lowest maintenance cost* possible.
3. Addition of lines to original installations, up to ultimate capacity, may be made quickly, easily and at very modest cost.

Your further inquiries will be welcomed.

STROMBERG-CARLSON

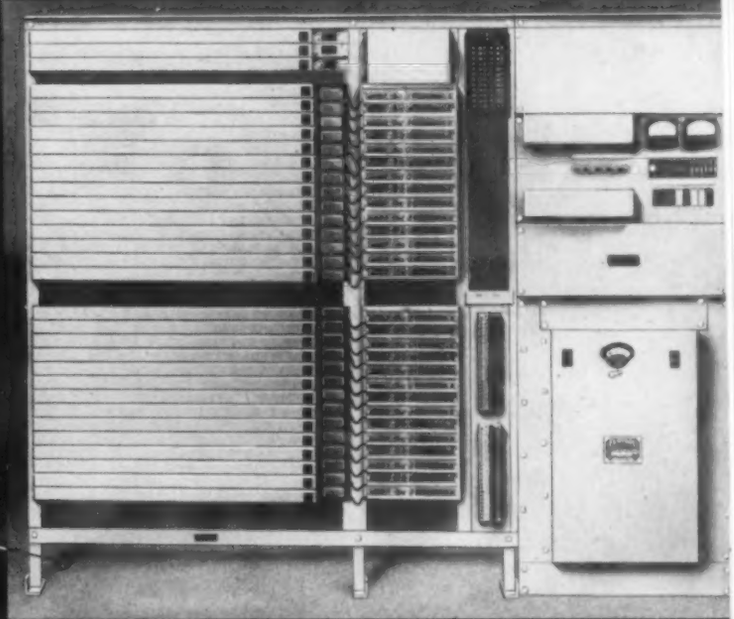
FACTORY, GENERAL OFFICES: ROCHESTER 3, N. Y., BRANCH OFFICES: ATLANTA 3, CHICA
KANSAS CITY 8, SAN FRANCISCO 3. IN CANADA: STROMBERG-CARLSON CO. LTD., TOR

TK1
.T36
5



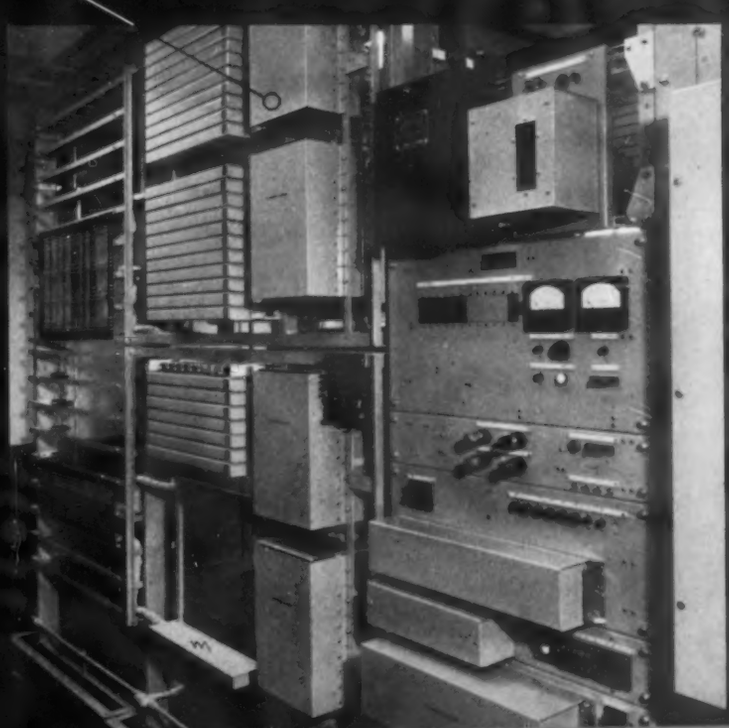
"F-40" XY-PBX

Ideal for the small office or factory. A single-party Finder-Connector system. Ultimate capacity: 40 Lines, 6 Links, 4 Central Office Trunks, 4 Information Trunks.



"F-80" XY-PBX

For medium-sized businesses; a single-party Finder-Connector system. Ultimate capacity: 80 Lines, 14 Links, 9 Central Office Trunks, 4 Information Trunks.



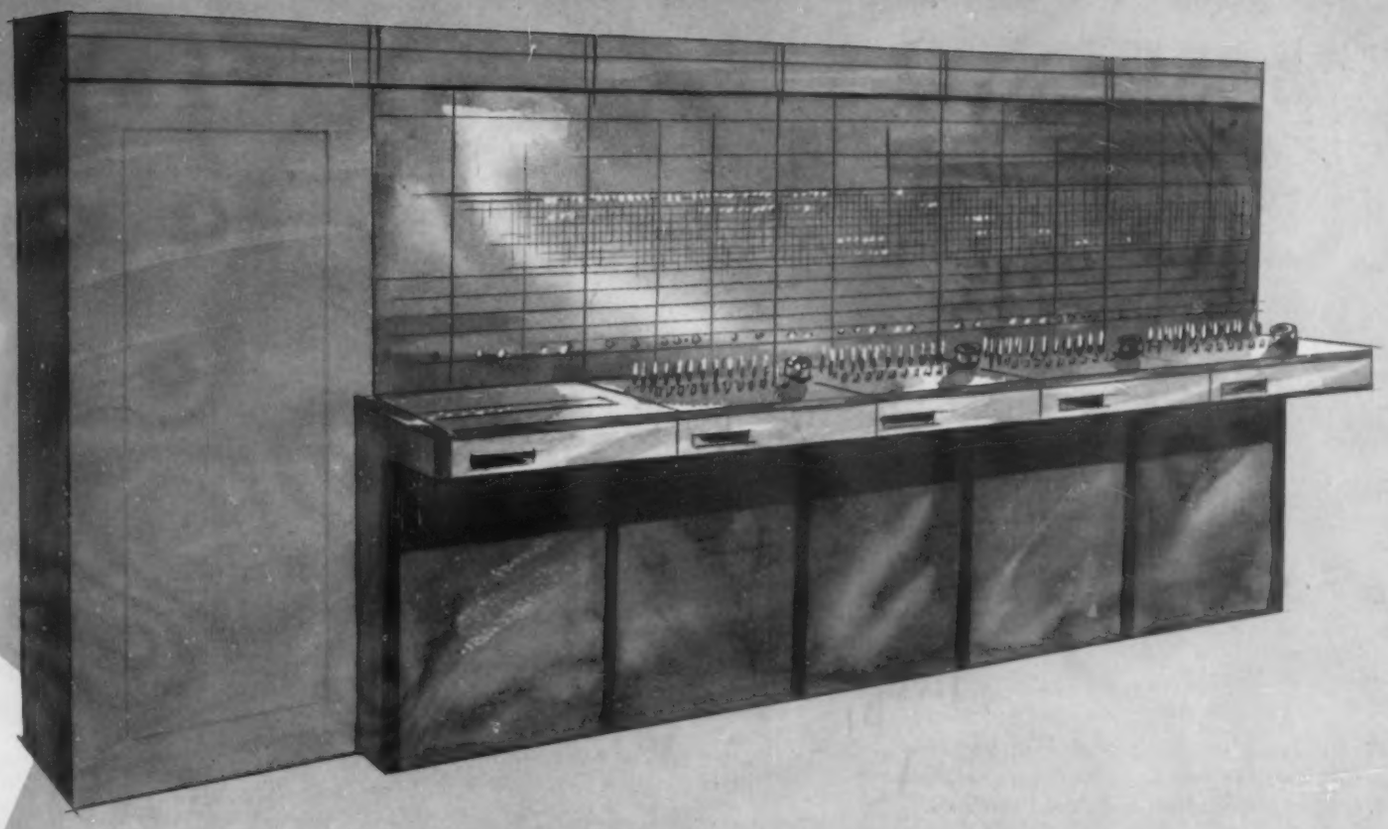
"TYPE H" XY-PBX

For the largest offices or plants—single or two-party Finder-Selector system of factory-wired shelf units, as used in XY-CDO and MCO installations. Ultimate capacity limited only by available floor space.

add this to thi

KELLOGG No. 3 TOLL BOAR
Now Available in 2-Position Siz

(OR MORE AS NEEDED)



to give better local and toll service

Start getting ready for Dial Service—now! You will find it good strategy—sound foreward thinking and doing—to add Kellogg's No. 3 Toll Board—in two positions or more—to your present manual equipment. Important *reasons—why* are listed at the right for your consideration.

1. The Kellogg No. 3 Toll Board will relieve your manual board of its toll load—give better service for both local and toll calls.
2. It will make you partially ready for dial, a start in the right direction.
3. The Kellogg No. 3 Toll Board is available in just two positions—or as many more as you need.
4. With the Kellogg No. 3, even small towns may have the fine toll service enjoyed by large cities.
5. Each position can be furnished with key sender pulsing which includes a simplified speed and ratio adjustment with automatic starts when digit keys are depressed.

KELLOGG

KELLOGG SWITCHBOARD AND SUPPLY COMPANY

AN IT&T ASSOCIATE

6650 South Cicero Ave., Chicago 38, Ill.

An Associate of International Telephone and Telegraph Corp.

VACATION NOTICE

The Kellogg Factory and Chicago Branch will be closed for vacation,

SUPPLIES OF Proven Dependability

● Shipment of guaranteed line supplies made from distribution center nearest you . . . Kellogg's warehouses located in Chicago, Kansas City, Dallas and San Francisco.

The following nationally-known manufacturers of supplies for the independent telephone field are participating in the 1952 Kellogg Co-operative Campaign.

American Creosote Works, Inc.

American Structural Products Co.

Ansonia Electrical Company

Bishop Manufacturing Corp.

Boston Woven Hose and Rubber Company

Churchill Cabinet Company

Continental Cross-Arm Co.

Cook Electric Company

Copperweld Steel Company

The Electric Storage Battery Co.

General Insulated Wire Works, Inc.

Gould-National Battery Inc.

W. A. Hammond Drierite Company

Indiana Steel & Wire Company

Kester Solder Company

Lorain Products Corporation

T. J. Moss Tie Company

National Carbon Company
A Division of Union Carbide and Carbon Corporation

It Regulates—It Compensates. Flotrol Battery Chargers assure continuous power savings by low standby losses combined with high overall efficiency. Compensation for variation in input voltage is automatic and practically instantaneous. Made by LORAIN PRODUCTS CORP.

Be Sure with Taca Cable Stripper—used for stripping rubber, lead and other kinds of cable sheath. Circumferential and straight cuts can be made at any predetermined part of cable. This safe and efficient stripper is made by TACA CABLE STRIPPER MFG. CO.

Newman Manufacturing Company

Paragon Electric Company

Raytheon Manufacturing Co.

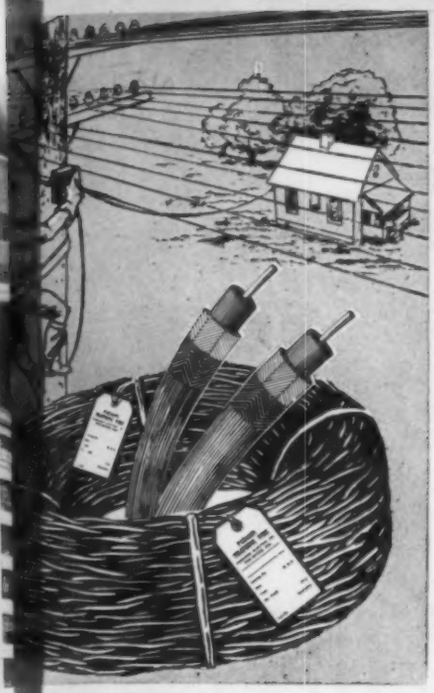
Ray-O-Vac Company

M. M. Rhodes & Sons Company

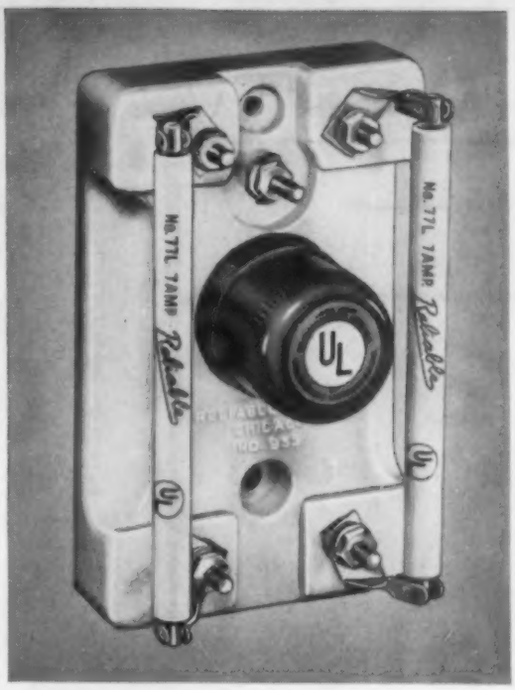
Schauer Manufacturing Corp.

Taca Cable Stripper Manufacturing Co.

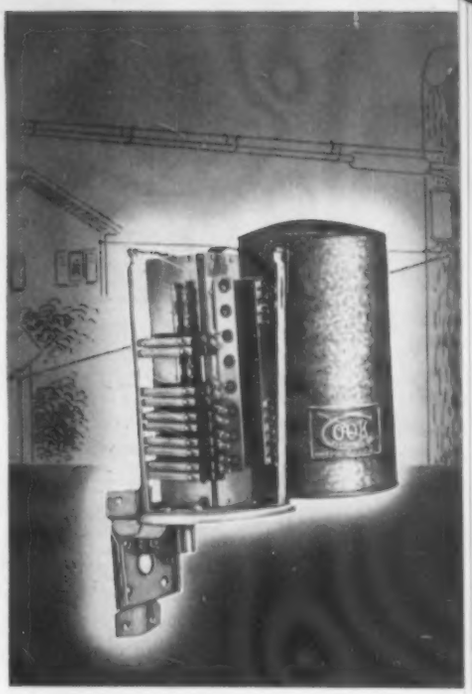
Vulcan Electric Company



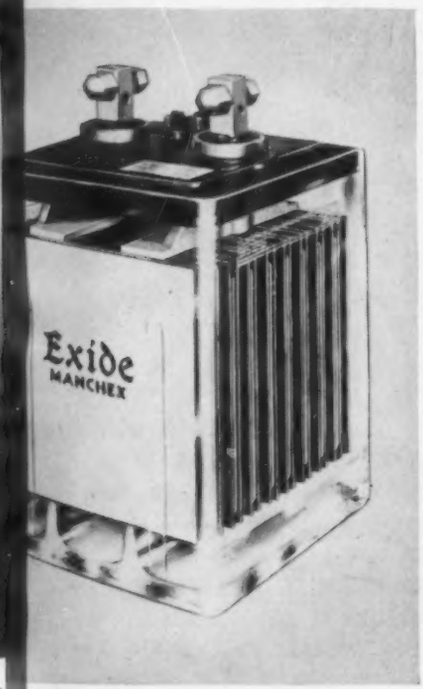
Trouble Shooting" Expense!—Install PARA- ELECTRIC COMPANY'S top quality wire. Great tensile strength, high con- ity, and perfect adhesion are some of its nding qualities. This drop wire is avail- n Copperweld or High Tensile BB Bronze.



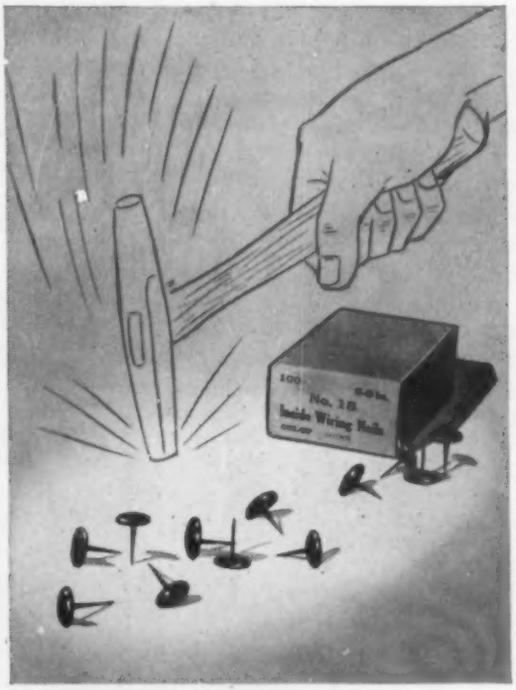
Simplicity of Design in the "955-A" Protector is your guarantee of constant station protection. Equipped with the P-495 Self-Cleaning Saw-tooth Discharge blocks—static discharges are instantly drained without danger of leaving line grounded. RELIABLE ELECTRIC CO.



Added Versatility! For use with plastic cable, the new S-20V Cable Terminal is made with 2 cable entrances; when one cable is required, pipe plug is inserted in other entrance. Order couplings and plugs later to conform to cable layout. Made by COOK ELECTRIC CO.



Proven—for 60 years Exide Batteries have serving the telephone industry . . . the chester positive plate with its button type truction provides long life . . . use Exide chex for all your battery requirements. CTRIC STORAGE BATTERY CO.



Why Do It the Hard Way? Making neat installations is easy—with Rhodes Wiring Nails! Designed for telephone work—quality insured by driving, bending, withdrawing and immersing tests. Made by M. M. RHODES & SONS CO., in several colors and pin-lengths.

Improve Your System with Copperweld. Non-rusting Copperweld Line Wire provides the best conductance of any high strength conductor. It has great strength for safe, economical, long-span lines—plus the ruggedness to withstand severe weather. COPPERWELD STEEL CO.

Send Your Next Order for Supplies to

KELLOGG

An IT&T Associate

KELLOGG SWITCHBOARD AND SUPPLY COMPANY • 6000 W. 51st Street, Chicago 38, Illinois

BRANCH WAREHOUSES AND OFFICES:

4501 Truman Road, KANSAS CITY 1, MISSOURI
1515 Turtle Creek Blvd., DALLAS 2, TEXAS
1663 Mission Street, SAN FRANCISCO 3, CALIF.
410 No. Syndicate Ave., "Midway Area", ST. PAUL, MINNESOTA

FLASHES AND PLUGS

LOVE LONG DISTANCE. "We're beginning to fall in love with Ottawa's long distance telephone operators," said an editorial in the Ottawa (Ill.) *Republican Times.*

"Not too long ago we asked for the 'city attorney of Gibson City' and a few moments later we were talking to him.

"We haven't always been that fortunate. Once, in another city, we remember writing a box for page one because an operator told us 'the lii-yun is busy' even before we gave her the number we wanted.

"Yesterday we thought one of the Ottawa operators might be upset when we asked for the 'chief sanitary engineer of the state department of health.' That request took about 90 seconds. It wouldn't have taken that long if Springfield hadn't cut Ottawa off and forced the operator to start over.

"When we asked for 'M. W. Nelson in Peoria,' we were conscious of all the telephone company ads: 'When you call long distance, be sure to give the operator the number. It saves time.'

"We didn't have any numbers for calls to half a dozen cities. Yet, in every case, the operator followed up our requests and we were soon talking to engineers, inspectors and newspapermen about the Illinois Waterway.

"Not once did it take more than a few moments to reach the party we wanted. We expected operators to answer: 'Please, please give us the right number just once.' But there wasn't a trace of either sarcasm or irritation. There was only courtesy and prompt service.

"Don't be at all surprised if one of our editorials in the near future carries a line at the bottom reading: 'This was written through the courtesy and cooperation of the long distance board at the Ottawa Telephone Co.' "

• • •

BE SHARP. Personally observed by B. Richardson, telephone engineer of the Oklahoma Corporation Commission, was the following incident:

The nine-year-old daughter of an Oklahoma small exchange operator was at work at the board while the mother was occupied in the near-by kitchen.

A local subscriber of the exchange had just placed a long distance call through the diminutive operator for a party in Enid, Okla.

By standing up almost on tiptoes, she had contacted the Enid operator.

"WH with your party" said the little girl to the local man who was calling Enid.

"Maybe your caller will not understand that language," mildly rebuked the mother.

"Well if he doesn't it is about time he was learning" and the little operator proceeded to complete the call.

• • •

GRAVE DECISION. The 45th Division headquarters in Korea telephoned a Seoul hotel to make a reservation for Brig. Gen. Hal J. Oldrow, artillery commander.

"Are you sure that you want to make a reservation for the general?" the voice on the other end of the line asked. "This is graves registration."

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

July 5, 1952

Contents

IN THE NATION'S CAPITAL 13
By Francis X. Welch

MOST FREQUENTLY USED TESTING INSTRUMENT DESERVES STUDY—Part 15 15
By L. N. Martin

PROUDLY WE SERVE 17
By Mayme Workman

THE PLANT MAN'S NOTEBOOK 19
By Ray Blain

PLANT MAN'S QUIZ 20

INFLATION AND THE TELEPHONE COMPANY 21
By Keith S. McHugh

COURTS AND COMMISSIONS 26

TELEPHONE KEY INSTRUMENT IN STAMPING OUT EPIDEMIC 34
By Mary B. Aker

H. D. FARGO Jr., *President & Advertising Manager*
R. C. RENO, *Vice President & Editor*
H. D. FARGO, *Vice President & Treasurer*
A. J. STULTS, *Secretary & Western Manager*
DAN FARGO, *Associate Editor*
HELEN CHRISON, *Associate Editor*
RAY BLAIN, *Technical Editor*
FRANCIS X. WELCH, *Washington Editor*
MAYME WORKMAN, *Traffic Editor*
VIVIAN RYDEN, *Circulation Manager*

Published by
TELEPHONY PUBLISHING CORP.

Vol. 143, No. 1. Published every week on Saturday by TELEPHONY PUBLISHING CORPORATION, 608 South Dearborn St., Chicago (5), Ill. 20 cents per copy (except special issues). Subscription $3.50 per year U. S. and Countries in U. S. Spanish Postal Zone; $4.50 Canada; $5.50 Other Countries. Entered as second class matter at the Post Office at Chicago, Ill., under the Act of March 3, 1879.

Telephone WAbash 2-2435
608 S. Dearborn St., Chicago (5), Ill.
U. S. A.

Reduce

pole and crossarm replacement with

Penta*

PENTA assures you year-after-year protection for poles and crossarms. Make your poles and crossarms last longer and reduce replacements—specify PENTA! Linemen like PENTA-PROTECTED wood—it's clean!

PENTA is proved . . . over 15 years of unsurpassed service records.

PENTA treatment costs no more.

PENTA is clean . . . a chemical of constant, uniform effectiveness.

PENTA is available. More than 60 commercial treating plants throughout the United States offer PENTA-treated crossarms and poles. An approved wood preservative, PENTA is a standard of the American Wood Preservers Association as well as railroads, utility and telephone companies, and government agencies.

*PENTA is a popular abbreviation of the name of the chemical PENTAchlorophenol.

THE DOW CHEMICAL COMPANY • MIDLAND, MICHIGAN

DOW CHEMICAL OF CANADA, LIMITED, TORONTO, ONTARIO

Write *to Dow for*

- ☐ *Booklet "Pointers on PENTA"*
- ☐ *Source for PENTA-treated Poles*
- ☐ *Source for PENTA-treated Crossarms*
- ☐ *Source for PENTA-treated Construction Lumber*

e Dow Chemical Company
ept. PE 9 · Midland, Michigan

ame_____ Title_____

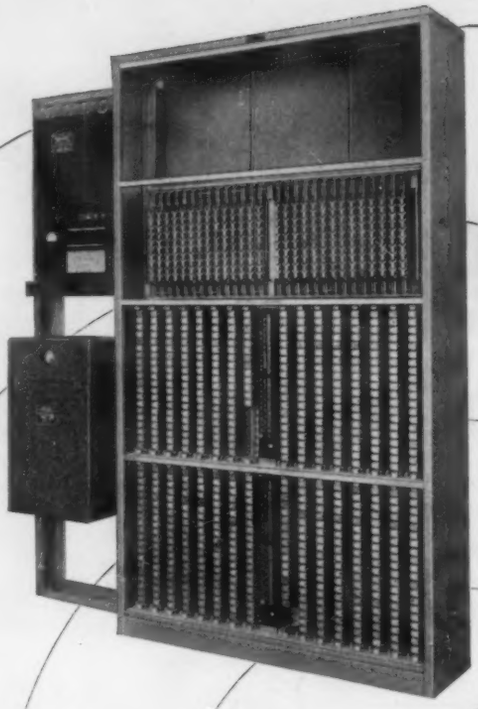
mpany_____

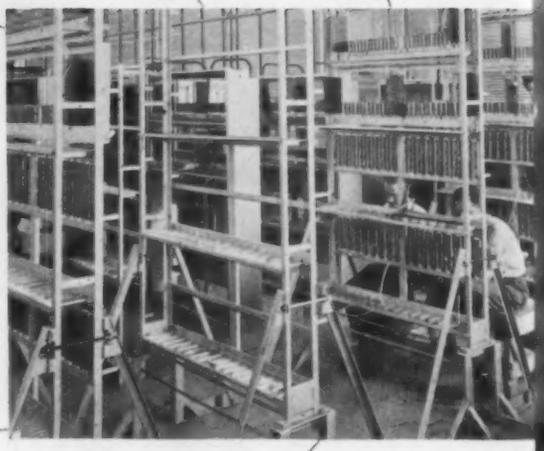
ddress_____

ty_____ State_____

the LEICh

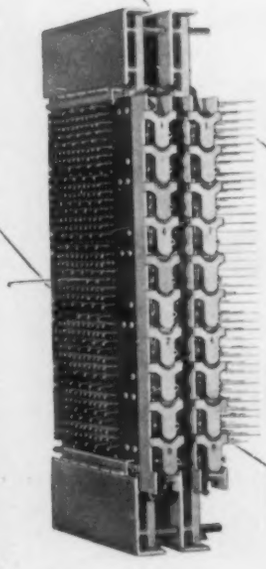
less gadgetr





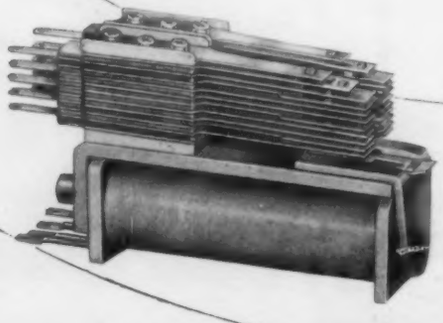
171 LEICH DIAL SYSTEMS SHIPPED IN LESS THAN 3 YEARS

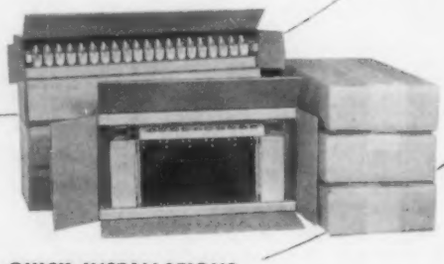
Steel frames for Leich Dial Systems upon which the switching equipment is mounted. The rapid acceptance and repeat orders for this equipment prove that it is a safe, sensible and profitable way to convert to dial.



DEPENDABLE OPERATION

Leich relay switches have withstood ten million operations without readjustment, replacement or signs of wear. Leich relays have been tested for 25 million operations with no failures. The relay make and break springs are preformed to insure correct contact pressure. This dependable relay operation keeps maintenance costs down.





QUICK INSTALLATIONS

Saves you time and money. Switchboard bays come fully wired for 100 lines and 16 links. The parts come in small packages, ready to jack-in as shown above. One man, with a helper, can install a 100-line board in a week or ten days.

LEI

Leich dial system

Greater profit possibilities • fewer headaches

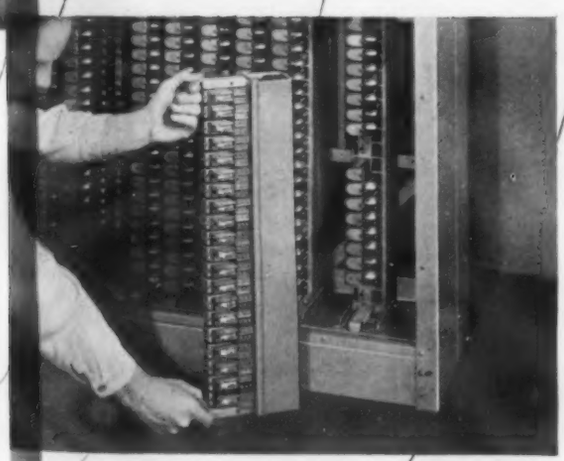
With a Leich Dial System you can provide the finest, fastest dial telephone service available.

Moreover, because of its basic simplicity, you can operate more profitably and have less maintenance expense than you could expect with any other dial switching equipment.

The Leich Dial System is a greatly simplified all-relay type switchboard. It uses fewer parts, has less to go wrong, is easier to understand and maintain. All operations are performed by full-size, heavy-duty, positive-acting relays. There are no moving mechanical devices to wear and require maintenance or adjustment.

The Leich Dial System protects you fully in case your exchange grows. It is less work and expense to add lines and links to the Leich Dial System. Your own man can jack-in ten additional lines in ten minutes and an extra link (connecting circuit) in an hour or two. No factory installers, nothing complicated, not even a connection to solder.

You will find Leich Dial Systems in operation all over the United States. Some of the larger operating companies now have dozens of them in service. Write for a catalog which gives complete details and for our map which will show where a Leich Dial System is in operation near you. Address Leich Sales Corporation, 427 W. Randolph St., Chicago 6, Ill.



EASY TO EXPAND

This man is jacking-in the relay bar which adds ten lines to the Leich Dial System. No soldering or further wiring necessary. A link can be jacked-in by your own switchboard man in an hour or two. It costs you less to add to the Leich Dial System.

LEICH MANUFACTURERS OF TELEPHONES, SWITCHBOARDS AND RELATED APPARATUS SINCE 1907

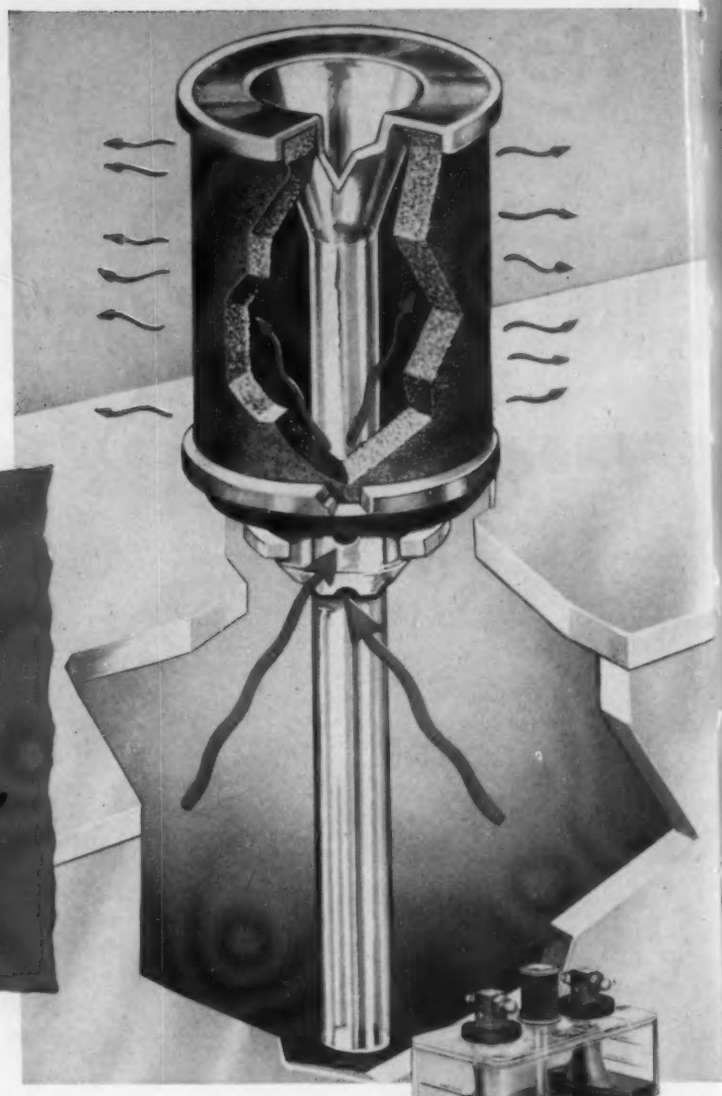
One of a series of
informative pieces about
C&D's Plasti Cal...
the century's greatest
battery development

NO BATTERY EXPLOSIONS

WHEN

"SAFTEE-VENT"

IS ON THE JOB!

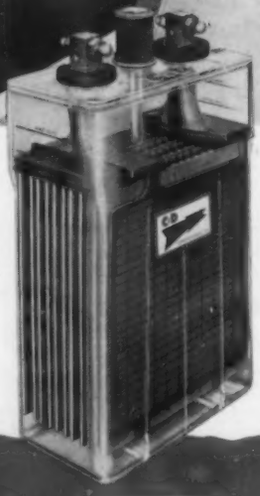


If you know your telephone batteries, you know that combustible gases are produced when a battery is charged, and that the resulting explosion hazard is a serious problem—or *was!* C & D engineers eliminated this danger when they perfected the Saftee-Vent for the amazing PlastiCal telephone battery!

The design and function of this superior vent are very simple, but highly effective. There are only two passages through the vent. One is through the plastic funnel-shaped frame, which allows easy filling and testing of the battery. The tip of the funnel is beneath the level of the electrolyte, thereby closing this passage to the escape of gas or to the entrance of flame. The second passage is through the cylinder made of acid-resistant, sintered ceramic material. This cylinder prevents an accidental spark or flame from entering the cell. At the same time, it allows explosive gases to escape safely to the atmosphere by diffusing them, so that a combustible mixture is not possible. Thus, the explosion hazard is eliminated.

The exclusive, patented Saftee-Vent is just *one* of the advanced-design features of C & D's PlastiCal—the battery that lasts at least 40% longer, uses 1/5 as much current and water, and delivers high output all its life! Truly, PlastiCal is "*the century's greatest battery development.*"

Available in sizes from 10 A.H. to 660 A.H.



C&D

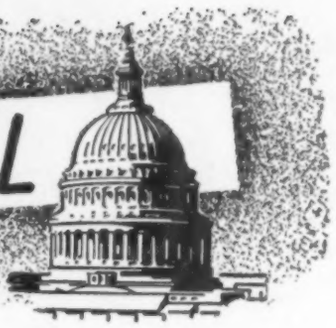
BATTERIES, INC.

OF CONSHOHOCKEN, PA.
(In the Philadelphia Area)

SALES AND SERVICE

Boston, New York, Philadelphia, Syracuse, Buffalo, Pittsburgh, Washington, Atlanta, Jacksonville, New Orleans, Cleveland, Detroit, Chicago, St. Louis, Minneapolis, Dallas, Denver, San Francisco, Los Angeles, Portland, Seattle

IN THE NATION'S CAPITAL



BY FRANCIS X. WELCH
WASHINGTON EDITOR

Having exhausted their credit and power of taxation, states returning to Colonial practice of charging tolls on super-highways. . . . Results from abandonment of "pay-as-you-go" basis of local responsibility in favor of centralized federal aid. . . . Suggests utilities provide good place to stop trend as any nation is safe from socialistic abuse as long as utilities are not in hands of the state.

GOVERNOR McKeldin (Republican), of Maryland, sent a number of people interested in the progress of public utility regulation searching through their history books with a very simple statement, which he made last week, about financing Maryland's highways. The governor, after commenting on the new toll bridge which is to be opened this month across Chesapeake Bay, said that some of Maryland's new super-highways would probably have to charge tolls.

This is, by no means, a situation peculiar to the Old Line State. Superhighways, on a toll basis, seem to be very much of a modern trend, judging by the success and growing use of the Pennsylvania Turnpike (connecting Philadelphia and Pittsburgh, via Harrisburg) and the New Jersey Turnpike which connects the New York City area with the Philadelphia area and other southern roads terminating at the new Delaware River Bridge). Many other parts of the country have expensive toll bridges which are rapidly being amortized by fees of motorists who use them.

To a student of public utility regulation this is an interesting development. It represents almost a full turn of the wheel of history, going back to Colonial days. Turnpikes were among the earliest forms of public utility operation in the new world. The others were gristmills, water distribution, and common carriers of all kinds. But early in the days of the colonies there was a growing sentiment to do away with toll roads, and to make highway building and highway maintenance a responsibility of the state, paid for by taxes and available to everyone without further charge. Ironically, Maryland claims to be the first state to do away with toll roads entirely.

The reason why we have to go back to the old way of charging each individual user for these expensive transportation facilities is not much different, in principle, from the reason for tolls back in the days of the Colonial turnpike. The first man to break a road through the Colonial wilderness, clearing the stumps, grading and draining, and donating the land to public use, naturally felt he was entitled to a return on his investment. So he threw a toll gate across the turnpike and levied a charge on all who passed.

The trouble with that system was that turnpikes became either too monopolistic or too competitive. Early attempts were made to regulate the number of highways and what they should charge at the toll gates. But then, as noted, there came a move to do away with tolls altogether, by making road building and maintenance a state function. The day had passed when private enterprise was needed for road building, as such.

Today, we have the older problem (back with us) on a bigger scale. The states have exhausted their own credit and power of taxation. So, when they are confronted with the need for new bridges or special high-speed highways, costing many millions of dollars, they have to call on private capital. Private capital, in turn, wants to be sure it will be paid off. So, state bonds are issued with the understanding that tolls will be charged. Experience has shown that this is a sure way of making these facilities pay for themselves, generally ahead of schedule.

To other public utilities, such as the telephone companies, this development is worth serious thought. It shows that there are limitations to a "welfare state" *as long as state responsibility is to be kept on a pay-as-you-go-basis.* During the past 50 years, some people, who thought they were very liberal, have at times suggested that so-called "free" services, performed by the state for its citizens, out of tax funds, ought to be extended more and more.

Cleveland once had a mayor, many years ago, who thought that eventually streetcar service in that city should be "free," supported by taxation. Everybody could take a ride whenever they took a notion, without payment of fares. As a matter of fact, we see a partial example of that in Cleveland today; also New York, Detroit, Chicago, and other cities which have taken over the operation of their own transit services. You cannot ride free, but there is usually a deficit which must be made up by the taxpayers. It is estimated, for example, that every time you ride for a dime on the New York subways, the taxpayers must pay from two to three cents as a subsidy for your ride.

Most cities try to keep their utility services—where they have gotten into the utility business—on as near a pay-as-you-go basis as possible. Recently the city of Pittsburgh raised its water rates 70 per cent without a hearing and, of course, without any regulation by the Pennsylvania Public Service Commission. That is another prerogative of government monopoly worth thinking about.

The danger for public utility service comes when politicians succumb to the lure of abandoning any pretense of pay-as-you-go. It is much easier to be elected to office by promising the voters what appears to be "free services" of all kinds. This is what is known as the "welfare state." But it really is only a prelude, if not a disguise, for a socialistic state. All forms of public utility services are now being furnished in Great Britain, by the government ostensibly, at cost—telephone, transit, railroads, gas and electricity, water, and highway maintenance. None of them show a profit. Most of them show deficits. But the over-all cost to the British government of these and all other welfare burdens is so staggering that the government is constantly fighting a desperate battle to stay solvent.

It is not easy to draw a line between where state responsibility should cease and where citizens ought to pay full cost of their own benefits. Perhaps public utility services (gas, electric, telephone, water, and transportation) would be a good place to draw the line. But, in addition to the transit subsidies already noted in some cities, we already find our federal government getting involved in making and selling electricity at a fraction of its honest production and distribution cost. So far, this trend of the "welfare state" has not directly approached the telephone business. But there is nibbling at the fringe in the form of partially subsidized loans for rural telephone service, which is encouraging the creation and expansion of co-operatives. Municipal, county, state or federal ventures would come next.

(Please turn to page 41)

REA Allocates $7,287,000; Provides for Purchase of 15 Indiana Companies

The Rural Electrification Administration approved $7,287,000 in loan allocations during the week of June 16 to 20 to finance modern telephone service in rural areas in five states.

On June 17, Nelson-Ball Ground Telephone Co., Ball Ground, Ga., received $59,000 which supplements an original allocation of $172,000 approved in November, 1950.

Recent studies by the REA Engineering Division, based on information from the borrowers indicate this supplemental loan is necessary to offset price increases since the original loan.

The REA loan funds are being used to improve and expand rural telephone service in Cherokee County.

* * * *

Also on June 17, Campobello (S. C.) Telephone Co., was allocated $78,000 for the expansion and improvement of existing telephone service in Spartanburg County.

This company now furnishes magneto service to 12 subscribers from two miles of line. It is owned and operated by the Town of Campobello but will be incorporated as a commercial company and will be operated and maintained under contract with a neighboring commercial company. With the REA loan, the borrower plans to build 56 miles of new line, rebuild the existing line, convert the Campobello central office equipment to dial operation and add about 270 new subscribers.

When the new construction and the improvements made possible with this loan are completed, this telephone company will be operating 58 miles of line bringing dial telephone service to 281 rural subscribers.

* * * *

Yorkville (Tenn.) Mutual Telephone Co. on June 19 received an allocation of $118,000 for the expansion and improvement of rural telephone service in Gibson and Dyer counties.

The REA funds will be used to finance the acquisition of the telephone properties of the Mason Hall Telephone Co., now providing magneto service to 200 rural subscribers over 50 miles of line. The borrower plans to build 13 miles of new line, rebuild all of the acquired line, convert the system to dial operation and add 54 new subscribers. Service without toll charge will be available between the two central offices of the company—Yorkville and Mason Hall.

The subscribers to be served under this loan are in addition to the 552 for whom facilities were provided in the first REA loan of $124,000 approved in August, 1950.

* * * *

Also on June 19, Powell Telephone Co., Powell Station, Tenn., received another allocation of $57,000 which supplements an original allocation of $188,000 approved in September, 1950.

This supplemental loan is necessary to cover the increased costs of construction which have occurred since approval of the first loan.

When the improvements and expansion made possible with the two REA loans are completed, about 750 rural telephone users in Knox and Anderson counties will receive dial service.

* * * *

West Texas Rural Telephone Cooperative, Hereford, Tex., was allocated $357,000 which supplements an original allocation of $454,000 approved in December, 1950.

REA states that this additional allocation is necessary to offset price increases since the original loan was approved. In addition revised plans for the system call for an increase in mileage of about 240, as well as the installation of seven instead of five dial central offices. They will be located at: West Hereford, Dawn, North Bovina, Oklahoma Lane, and three in the area around Friona. Also facilities will be provided in this loan for dial service for 20 new subscribers not included in the first loan.

The completed system made possible by the two REA loans will provide dial telephone service to 1,320 rural subscribers over 980 miles of line in Deaf Smith, Parmer and Castro counties.

* * * *

The Hoosier Telephone Cooperative, Inc., Indianapolis, Ind., a new cooperative, on June 20 received $6,618,000 for improving and expanding telephone service in rural areas in Fountain, Vermillion, Putnam, Montgomery, Benton, Warren, Tippecanoe, Carroll and Newton Counties in Indiana, and in Iroquois County, Illinois (TELEPHONY, June 28, p. 17).

As a nucleus, the new cooperative proposes to acquire 15 telephone companies generally known as the West Side Properties of the John T. Detchon Estate. These companies now serve 11,869 subscribers in Indiana and Illinois over 1,923 miles of line. The properties were recently put up for sale by court order in settling the Detchon estate.

The cooperative plans to build 593 miles of new open wire lines and cable, rehabilitate 1,130 miles of existing line and integrate the remaining 793 miles of line into the new system to serve 4,723 new rural subscribers and provide improved service to the 11,869 present subscribers.

When improvements and expansion financed by the REA loan and cash equity supplied by the borrower are completed, the system will serve 16,592 subscribers over 2,516 miles of line from 33 central offices. Of these, 25 are now common battery or magneto central offices which will be converted to unattended dial, two are already dial, and six will be common battery.

It is anticipated that at a later date, the Hoosier Cooperative will dispose of the properties to smaller local telephone organizations which, "can give assurance of giving reliable, adequate, low-cost telephone service in the areas involved."

(A background statement on this loan may be obtained by calling the Department of Agriculture, Extension 3564.)

Most Frequently Used Testing Instrument Deserves Study

By L. N. MARTIN
Virginia, Ill.

WHILE WE ARE RESTING from the discussion of trouble records, let us consider the most frequently used testing instrument in the telephone business—the voltmeter. The voltmeter is an instrument which was originally designed to measure voltage or electromotive force (EMF) of, for example, a generator or battery, or the difference in potential between any two points in a circuit.

One day—it must have been many years ago—some telephone man discovered that a voltmeter in series with a battery was a very convenient instrument for measuring trouble. In other words, he used a voltmeter to measure resistance. He evidently just used an extra power-board meter, because the meters found on some of the older test desks are just power-board meters put to a different use. They have a 0-30 scale such as would be used for measuring the 24-volt central office battery; and the resistance of the meter (which is all important when measuring trouble) is often not even stated on the name plate.

A voltmeter, especially designed for trouble testing, is now found on all modern test desks, and portable meters have been designed for use in offices too small to have a test desk and to be carried by repairmen. Some of the large companies now furnish portable voltmeters to all of their repairmen.

Practically all telephone men have used a voltmeter for detecting trouble and for roughly measuring its extent, but few of them realize the full possibilities of this instrument or fully understand how it works. Therefore, we believe that a study of the voltmeter will be interesting and helpful to all telephone people and will aid in reducing trouble and giving better service.

It is not necessary that a telephone man fully understand what is inside the sealed case of the meter as it is ordinarily sent back to the factory when in need of repairs, but there are certain things that the telephone man should know if he wishes to get the maximum benefit from the use of the meter.

PART 15. The preceding article in this series appeared in the June 14 issue, p. 19.

There are several different types of voltmeters, each of which operates on an entirely different principle, but only one of these types is used for trouble testing. This is called the d'Arsonval type, and its movement consists of a coil of wire so mounted that it may revolve in the field of a permanent magnet. Two springs (they look like the hair spring of a watch) hold the coil so that the pointer or needle, which is attached to the coil, points to "0" on the scale when the coil is not energized. When a current flows through the coil, the resulting magnetic field reacts with the field of the permanent magnet, causing the coil to revolve and move the needle. The construction of the meter is such that the amount of movement varies directly with the amount of current.

This type of voltmeter is actually operated by current rather than directly by voltage. However, Ohm's Law states that if the resistance remains constant, the current will vary directly with the EMF; therefore, the meter may be calibrated in volts. The voltmeter must have a rather high resistance so that the current through it will be limited to a value that will not damage the delicate coil and so the meter will not take an appreciable current from the circuit being tested. The current through a voltmeter is usually limited to .001 or even .0001 ampere.

The needle of this type meter tends to move to the right when the voltage is applied in one direction and to the left when the voltage is reversed. Some meters have a "0 Center" scale so as to indicate both the direction and the amount of the voltage, but those used for trouble testing usually have a "0 Side" scale (usually left) so the battery must be correctly poled. *This type of meter cannot be used for measuring alternating voltage.*

In most voltmeters there is very little resistance in the moving coil itself (in one type, only four ohms), but the resistance is built up to the desired value by placing a non-inductive resistance in series with the movement. An addition resistance, which is called a "multiplier" because it changes the scale of the meter, may be added outside the case. Suppose we have a meter with a 0-10 scale (*i.e.*, 10 volts causes a full scale deflection), and the resistance of the meter is 1,000 ohms. If we now add a 9,000-ohm resistance in series with the meter, the total resistance will be 10,000 ohms or 10 times what it was before, and the current will be one-tenth its former value. Ten volts will now register "1" and it will require 100 volts to move the needle to "10."

To read the meter we must now multiply its indication by 10; hence the name "multiplier." We could, however, replace the scale with a 0-100 scale. The important thing to remember is: *Adding to or subtracting from the series resistance of a voltmeter changes its scale.*

Sometimes when you look at the circuit drawing of a meter you will see a number of small resistances in series with, and shunted around, the moving coil. These are used for various purposes which need not concern us at this time. When we speak of the resistance of a meter we mean *the resistance which a Wheatstone Bridge would measure if connected to the terminals of the meter.* If you have a voltmeter of unknown resistance, its true resistance can be ascertained in that manner.

Now let us consider the effect of reducing the resistance of a voltmeter by placing a shunt around the meter (including its series resistance). *This does not change the scale of the meter.* It still reads correctly the voltage connected to its terminals. Of course if we used a meter with a very low shunt to measure the voltage of a dry battery, the large current flow through the internal resistance of the battery would cause an appreciable IR drop and the effective voltage at the terminals of the battery would drop, and this would be reflected in the reading of the meter; but notice that the voltmeter still reads correctly the voltage connected across its own terminals. For measuring EMF, or voltage, a voltmeter is never used with a shunt, but for use as a trouble measuring instrument, the shunt is frequently used to reduce the resistance of a meter because no scale change is required.

Fig. 1 shows a voltmeter connected to measure an external resistance "X." It is a simple circuit consisting of a voltmeter with internal resistance "R," a battery of "E" volts, and the unknown resistance "X," all of which are in series. Ohm's law states that for such a circuit the current (I) is equal to the EMF in volts divided by the resistance in ohms. In this case the resistance is R plus X. We may, therefore, write the equation $\frac{E}{R+X} = I$, which we will call equation 1.

Now Ohm's law may be applied to any part of a circuit as well as to the whole. Let us apply it to the voltmeter only. The voltage across the terminals of the meter is indicated by the deflection of the needle which we will call "D." We may now write $\frac{D}{R} = I$, which we will designate as equation 2. Now since the whole circuit is in series, the "I" of equations 1 and 2 are the same, therefore, and $\frac{E}{R+X} = \frac{D}{R}$, which we will call equation 3. Solving equation 3 for "X" gives us:

$$\text{Formula I or } X = \frac{R(E-D)}{D} \text{ or}$$

$$X = R\left[\frac{E}{D} - 1\right]$$

This formula may be used to determine the external resistance which is indicated by any deflection of the needle.

Equation 3 may also be solved for "D" to obtain:

$$\text{Formula II or } D = \frac{ER}{R+X}$$

This formula may be used when we wish to know what deflection will be caused by a given outside resistance.

Notice that to use either formula the resistance of the voltmeter and the voltage of the testing battery must be known. We often see a man using a voltmeter for testing trouble when he has no idea what resistance voltmeter he is using. He is losing much of the value of this testing instrument.

We will give a few examples of the use of the formulas. Suppose that we have a 100,000-ohm meter, a 100-volt battery, and the deflection is 60 volts. By substituting these values in Formula I we find that the outside resistance is 66,666.6 ohms. Now suppose we use the same meter with a 90-volt battery to obtain a 60-volt deflection. The outside resistance is 50,000 ohms. This shows how important it is to know the battery voltage. *(Note: Due to the very small current flow, the internal resistance of the battery may be neglected in all of these calculations.)*

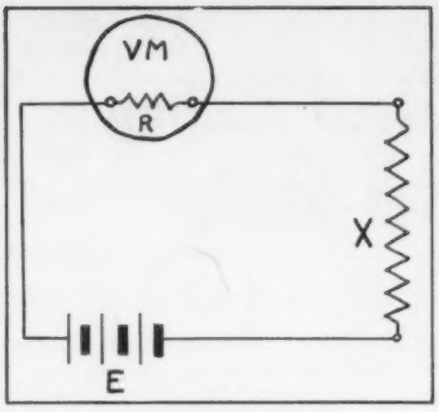


Fig. 1

Now let us use a voltmeter of a different resistance, say 10,000 ohms, and a 100-volt battery. A 60-volt deflection now indicates 6,666.6 ohms which is only one-tenth of that indicated by the 100,000-ohm meter under the same conditions. The testman who does not know the resistance of his meter is certain to make large errors.

Suppose we wish to test a large number of lines to determine which have a leakage resistance of more than 50,000 ohms and which have less than 50,000 ohms. We must determine the deflection which indicates 50,000 ohms. If we are using a 100,000-ohm meter and a 95-volt battery, we substitute these values in Formula II and find that the required deflection is 63.3 volts.

In theory it may seem that any resistance could be measured with one voltmeter, but in practice it is found that two or more meters of different resistances are required. Fortunately, it is not necessary to actually use several different meters as the resistance of a meter may be changed by the flip of a key. (A three-position key will give a choice of three resistances.) This key may either short out some of the series resistance or place a shunt around the meter (including its series resistance). We must remember, however, that when we change the *series* resistance, another scale must be placed on the meter. Therefore, the usual method is to use a shunt. As some reader may wish to connect a shunt around his meter, we will give the following simple formula for that purpose without going into its derivation:

$S = \frac{RM}{M-R}$ where "S" is the required resistance of the shunt, "R" is the desired combined resistance, and "M" is the previous resistance of the voltmeter.

If the problem is to convert a 100,000-ohm meter to a 1,000-ohm meter, we substitute these values in this formula and find that the shunt should be 1,010.1 ohms.

The 100,000-ohm meter is now standard for measuring high resistances such as insulation leakage. (The low resistance meters found on some of the older test desks are useless for this purpose.) With a 100-volt battery, it gives good readings up to about two megohms as shown by the following:

Resistance	*Deflection*
2 megohms	4.8
1 megohm	9.1
900,000 ohms	10.0
500,000 ohms	16.7

However, for the megohm range it is better to use a "Megger." The practical lower limit for the 100,000-ohm meter is about 5,000 ohms (Deflection 95.2).

For reasons that we will not have space to explain at this time, readings near either end of the scale of any meter are inaccurate. For a 100-volt battery, readings below 5 and above 95 are to be avoided, and it is better to stay between 10 and 90.

The 1,000-ohm meter is also standard. Its practical range is from about 5,000 ohms down to about 100 ohms. However, for measuring resistances less than 500 ohms, the milliammeter is better (not included in this discussion).

Since the ranges of the 100,000-ohm meter and the 1,000-ohm meter barely meet, a third meter is desirable. This should be of 10,000 ohms or 20,000 ohms.

There is a very simple rule for determining which meter to use in any given test: *Try all three, then use the one that brings the needle nearest to the center of the scale.*

A battery of 90 to 100 volts is best for measuring high resistance with the 100,000-ohm meter. The same battery may be used with the lower resistance meters, but a battery of lower voltage is also satisfactory if used with a suitable scale. There is some advantage in having the scale run somewhat higher than the battery voltage, and the following are often used:

Voltage	*Scale*
100	0-120
90	0-100
20	0- 24

It would require too much time to make a calculation, even with the aid of a formula, for each test; therefore, a table or chart is usually prepared which shows the outside resistance for each point of deflection. A separate column is required for each voltmeter

(Please turn to page 32)

Proudly We Serve

By MAYME WORKMAN
Traffic Editor of TELEPHONY

WHEN I WAS INVITED to present a traffic topic at the 47th annual convention of the Illinois Telephone Association, my first thought was, "What shall I talk about?" In the 18 years I served as the association's traffic supervisor, every traffic topic of any consequence had been presented: "Selection and Training of Operators," "The Voice with a Smile," "The Proper Handling of Equipment," "The Manager's Interest in the Traffic Department," "The Operator's Role in the Telephone Industry," and other subjects.

Like Old Mother Hubbard, I found my cupboard bare of ideas. And then the thought occurred to me, "Why not speak about the service rendered by the traffic department?" This seemed like a good idea and I welcome the opportunity to eulogize not only the traffic people but all the men and women engaged in the telephone industry as well as the companies they serve.

All things must have a beginning and I would like to start by recalling a day many years ago—Apr. 7, 1907, to be exact—when a shy, slim, brown-eyed girl of 15 climbed two flights of stairs in a building on Monroe St. in the city of Springfield, Ill., to place her application for a job as switchboard operator with the old Interstate Telephone & Telegraph Co. She was interviewed by the chief operator, Miss Anne Barnes, an attractive, soft spoken, genteel young lady, who in later years became a well-known figure in the Independent telephone industry through her activities as traveling chief operator for the Iowa Independent Telephone Association, and for her articles published in TELEPHONY.

The applicant was employed by the chief operator and she started her career in the telephone industry where she is still serving today. In the parlance of Groucho Marx, "That young lady, that's me—Mayme Workman."

In 1907 there were not many types of employment available to women and, in my opinion, I had chosen the best vocation of all. In the 45 years I have served in the telephone industry, I have never changed my opinion. I served proudly then and, if this is possible, I serve with even greater pride today. For the benefit of the young people in the industry, may I state that in 1907 operators worked nine hours a day and our wages were $16 a month. We had one Sunday a month off. I had a split trick and walked to and from work, a distance of one and a half miles, making a total of six miles daily. I might add that the wages paid by the telephone company then, as now, compared favorably with wages paid by other industries in the community. When I was asked where I worked, I would say proudly, "I'm a telephone operator. I work for the telephone company!" Then, as now, not every girl could obtain employment at the telephone company. You had to measure up to certain standards and I was proud of the fact that I had made the grade.

Yes, "Proudly We Serve!" And why shouldn't we? Where can you find another industry with a higher caliber of employes or an industry which has accomplished so much in such a short time? The telephone industry is still an infant in comparison with many other industries, but its achievements are astounding. We can scarcely realize there are people living today who were born before the telephone was invented. . . .

Alexander Graham Bell is a man of whom we may speak with pride. He came from a scholarly, financially comfortable Scottish family, and received a good education. He possessed a capacity for a vast amount of work, an absorbing, intelligent curiosity about a wide range of subjects, and, of course, genius. He was a musician, a philanthropist and a humanitarian as well as an inventor. The activity for which he desired to be best remembered was his work in teaching the totally deaf to speak. Mr. Bell was also a pioneer enthusiast and supporter of aviation. A man-carrying kite which he built might be called the father of the glider. He also financed the early work of a group of young air enthusiasts which included Glenn Curtis and Thomas Selfridge. The inventor of the instrument which created the industry in which we serve is indeed a man of whom we may speak with pride.

At this point I would like to quote from a book entitled "Talking Wires," by Clara Lambert, because the author relates so effectively the saga of the telephone:

"The Telephone—it is such an every day thing, like walls and floors and windows. But there is a tale behind each ring that is full of heroic deeds as well as service—making this instrument the story of a great adventure.

"First of all there are the many hands that touch, feel and make the parts of the telephone instrument and the wires and cables that connect it. There are lumbermen in the forests who cut trees for poles; miners who get the copper, tin, lead, gold, platinum, coal and other minerals from the ground; girls and men in huge factories who put together parts of the instrument, or who work machines that prepare the copper wire and cable.

"There are thousands of operators who connect people; linemen who put up poles and wires and keep the avenue of communication clear; men who fight blizzards, floods and earthquakes. Behind them all are the engineers whose inventions, planning, careful continuous search, bind the system into a whole. Then there are the millions of people who use the telephone every minute of the day.

"Out in the lonesome places of our country some farmers fight pests with the aid of the telephone; lonely people are less lonely because of it; and operators in their small offices are often heroines. Air pilots feel safer in the air; and *are* safer with it and the radio as co-workers; newspaper men keep the

telephone wires going, not only with words, but with typewritten messages and photographs. Fishing vessels at sea and travelers on the huge liners have found themselves closer to land because of the radio-telephone. Last but not least, are the thousands upon thousands of calls to the butcher, the baker, the candlestick maker, and the "hello" that is sent to someone just for the sake of hearing a voice and the news of the everyday events of uneventful lives.

"From one coast to another, over hills and valleys, plains and mountains, words travel faster than any one dreamed they could in 1876, when Alexander Graham Bell sent the first telephone message over his 'improvement in telegraphy,' 'Mr. Watson, come here, I want you.' In that year, he speeded up the world of communication and annihilated space. It is the telephone wires that extend the concerts and programs of radio into great national networks, making this huge country of tremendous spaces and scattered settlements a more closely knit community. It has brought people together. It has helped change their thinking. It has given them a greater feeling of physical security.

"This is the story of the people all along the line—the users and the workers."

If the telephone girl who sits still in her chair and listens to voices from everywhere could see beyond the cords she is weaving, she would find as day begins she is helping merchants secure their wares for the day's business, getting in readiness for the morning shopping soon to begin. As the clock ticks away, her switchboard becomes busier with the opening of offices, factories and stores. People are traveling, freight is being shipped, boats are leaving, airplanes are flying, buses are humming along the highway—and all are connected in some way by the wires of communication.

There is a lull at noon as people pause for refreshment, but afternoon brings a new rush of calls as business picks up after the noon hour. Evening brings a slowing down of calls. The restless life of the city grows quieter. Operators know that the peak of the day calls are over. Then night comes. Friendly calls are made, men away from home call their families. Many long distance calls are made during the early hours of night. And always there are telephone operators on the job. The night operator is alert to any unusual condition or signal knowing that many emergencies occur during the night hours; illness, robberies, fires, and emergencies of every nature.

As previously stated, operators in small exchanges are frequently heroines. There are so many I could tell you about but I have chosen the recent experience of Mrs. Lucille Wilson, night operator at Alamosa, Colo. A heavy snow was falling in the winter darkness when Mrs. Wilson heard the sound of a low-flying airplane. Then she heard the sound of the low-flying plane again as it circled back over the town. A light flashed on Mrs. Wilson's switchboard. An anxious voice said, "This is Ralph Zook, the dispatcher down at the railroad depot. Did you hear a plane? Didn't sound right, somehow. It's flying pretty low."

"I heard it, too," said Mrs. Wilson. "And there's no plane scheduled this time of night."

"That plane could be in trouble," said Mr. Zook. "We ought to do something about it."

"I'll try to reach someone to turn on the lights at the airport," said Mrs. Wilson. "Listen! There it is again! It's lost!"

Quickly Mrs. Wilson went into action. She called the airport, the government weather station, and a private flying service. But no one answered.

Then she reached Stamy Edmiston, an airline employe, at his home. He rushed to the airport and turned on the landing lights. A few minutes later a C-46 military transport loomed out of the snowstorm and came in for a safe landing. Thirteen men stepped from the plane, none the worse for the experience.

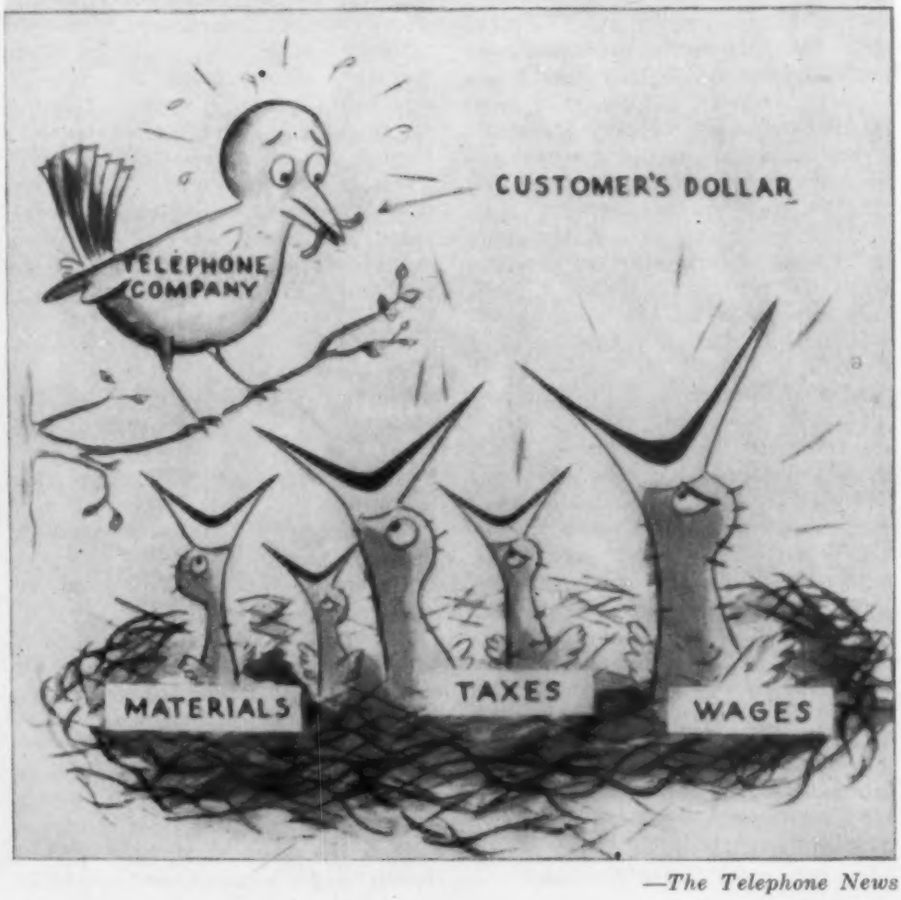
What could have been tragedy was prevented by quick-acting Ralph Zook and Stamy Edmiston and the alert operator, Mrs. Lucille Wilson—one of about 650,000 telephone men and women guarding and serving America, 24 hours a day, in every kind of weather. There are thousands of "Lucille Wilsons" in the telephone industry—alert operators who are ready to meet any emergency which may arise. Is it any wonder we serve with pride!

Telephone men and women are outstanding, singly or in a group. They are people with whom you are proud to associate.

The Illinois Bell Telephone Co. 1951 annual report . . . contains a tribute to Illinois Bell employes from their president, William B. Kahler, that I am confident he would not object to extending to the men and women in the Independent telephone industry as well. Mr. Kahler stated: "Our people meet every challenge; the greatest asset this business has is the men and women whose skill and teamwork have enabled the organization to meet every challenge in war and peace. The future

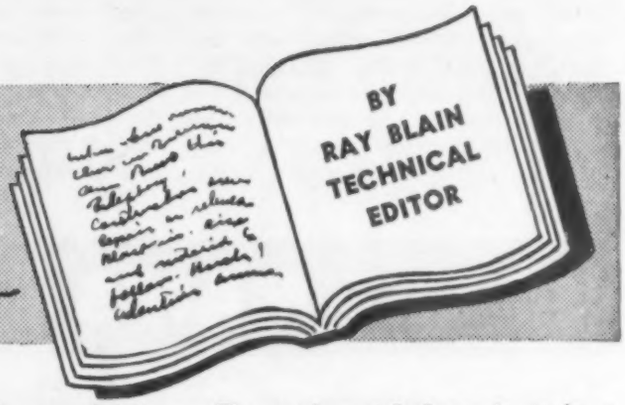
(Please turn to page 36)

Enough to Go Around?



—The Telephone News

THE PLANT MAN'S *note book*



BY RAY BLAIN TECHNICAL EDITOR

UNQUESTIONABLY the modern telephone has many improvements over the models manufactured and generally used only a few short years ago. The receiver, with the exposed binding posts mounted on the end, was a constant source of trouble. This was later improved by placing the binding posts inside the receiver shell. Moreover, the present handset with the capsule receiver and transmitter is practically trouble-free.

There are many who can remember well the old felt covered bottoms on desk stands. These were first in green and then later were changed to brown. This felt soon became soiled, then wore ragged and had to be replaced. Seldom, if ever, does the plastic mounted on the bottom of the combination desk stand cause trouble. In addition, the slippage is less with this arrangement than was ever obtained from the felt covering.

An installer always experienced difficulty mounting the wall telephone at the proper height to please each member of the family. Invariably, it would be too low for some and too high for others. This represented a direct cause of many poor transmission complaints. The hanging handset type wall-mounted telephone has completely eliminated this difficulty. Regardless of the height of mounting, just so that it is in reach, the transmitter is always positioned correctly for the tall or the short members of the family. In this connection, also, the wall niche is not necessary, for the hanging handset type telephone may be mounted directly on the wall, even in a hall for convenient use.

Modern rubber-covered cords have a long trouble-free life. The old textile-insulated and covered cord was often placed out of service by a few drops of moisture. These new cords often give years of service without causing a single case of trouble. The writer's telephone was installed over 12 years ago and the cords are still good and have never caused trouble.

The key type telephone eliminates the need for numerous switching keys to be mounted on a desk. Signal lights, hold keys, transmitter cut-outs and other modern conveniences may be provided as desired.

The modern telephone is truly a long-lasting precision instrument. We often wonder how it is possible to manufacture it at such a low cost.

• • •

For many years this writer has advocated a top-mounted ladder rack to be used on light installation trucks. Many have disputed this idea, claiming that the side-mounted rack is more satisfactory and convenient.

Perhaps heavy traffic and hazardous driving conditions have been an influencing factor, but we now note with pride that practically all of the new light installation trucks are being equipped with the top-mounted ladder and tool racks.

• • •

The Chesapeake & Potomac Telephone Co. recently installed West Virginia's 50,000th rural telephone.

• • •

We noted an interesting new device installed in a New York restaurant rest room recently that effectively replaces the roller towel for hand drying.

Ohio Bell Telephone Co. recently opened a permanent communications exhibit in the Ohio State Historical Museum in Columbus titled "Cavalcade of Communications." LEFT PHOTO: Among the telephone exhibits is one which includes the telephone song collection of C. A. SWOYER (left), retired Ohio Bell engineer and TELEPHONY's Ohio correspondent. Mr. Swoyer is showing his collection to ERWIN C. ZEPP, museum director. RIGHT PHOTO: RANDOLPH EIDE (second from left), president of Ohio Bell, talks through an 1877 model telephone to ARTHUR HAMILTON, president of Ohio State Archaeological and Historical Society. Listening are R. K. HONAMAN (left), director of publications, Bell Telephone Laboratories, and JOHN M. SHAW, assistant vice president, American Telephone & Telegraph Co. The exhibit is the work of Norman Treadon, Ohio Bell display supervisor, and the museum staff, assisted by Bob Martin of the Cleveland Long Lines department, and Carl Floyd, commercial manager of the central area of Long Lines, with the cooperation of Bell Telephone Laboratories.

This arrangement consists of a small wall-mounted metal cabinet with an opening at the bottom. Placing the hands in this opening breaks a beam of light and a photo electric cell starts a motor that operates a hot air blower. The space is also flooded with a strong ultra violet light. The machine continues to operate as long as the hands are in position to break the light beam.

This appears to be an efficient hand dryer that should be more sanitary and efficient than any type of towel for use in a public wash room.

PLANT MAN'S QUIZ

Q. When a customer does not have a preference for the location of a telephone, what method should be used by the installers to determine a suitable location?

A. We seriously doubt if this will happen with any great frequency. However, when it does, it is our suggestion that a suitable location which will require a minimum of material to make a proper installation be selected.

• • •

Q. Will it be practicable for our company to mail dry cell batteries to all customers on rural lines, at certain intervals, and request the customer to install them in the telephone? It is thought that the postage will be much cheaper than sending a troubleman out on the line to make the change.

A. This idea has been tried with varying degrees of success by numerous operating companies for many years. In general, we would not recommend the idea because you cannot always depend on the customers to make the battery change properly. Generally, there will be a few who will connect the cells incorrectly and a troubleman will be required to go out anyway and make the correction.

It is our opinion that the battery change can best be made by a regular repairman, either on special visits or when he is out on the line on other trouble. If a special visit is made, the installation can be thoroughly inspected and all conditions that may cause trouble can be corrected. The practice of preventive maintenance in this manner will probably prevent later trouble trips and thus prove an overall economy.

• • •

Q. Will it be possible to paint old plastic telephone sets to provide colored instruments which are occasionally requested by our customers?

A. Various attempts have been made in the past to spray plastic telephone cases with colored paint, but, in our opinion, this practice has not been very successful. The paint soon wears unevenly and becomes unsightly.

When called upon to install colored telephones, it is our suggestion that you purchase them from your telephone supply house.

• • •

Q. We wonder whether an operating company will be justified in refusing to install extra long cords when requested to do so by customers?

A. It might not benefit public relations to refuse to install extra long cords, but certainly any operating company would be justified in pointing out the disadvantages of this type of installation.

If a long cord will create a hazard or prove difficult and costly to maintain, then its use should, in most cases, be discouraged. However, as a rule, if the advantages of an extension telephone or a jack arrangement are explained to a customer in detail, they usually can be convinced that the extra long cord is not the best method to be used to meet his special service requirements.

• • •

Q. Is the use of acetate cloth tape to repair frayed telephone cords considered a good practice?

A. This was a commonly used wartime practice when cords and other materials were in critical short supply.

We would not recommend it at this time when new cords may be procured to replace old frayed ones. If a cord is frayed and it is not presently noisy, there is every probability that it soon will develop trouble and a second visit will be required in the near future to replace it. Replacement at this time will be good preventive maintenance.

• • •

Q. When a station protector is grounded by a pipe strap on the customer's premises, we often find that the connection has been removed. Is there any method of preventing this kind of trouble?

A. In our opinion, this trouble may not be entirely prevented, but it can no doubt be reduced somewhat by locating the ground clamp in an out-of-the-way and hidden location, if possible. You might also place a tag on the connection bearing the notation that if the connection is removed, the telephone company should be notified immediately so as to avoid lightning damage.

• • •

Q. Would you please advise us of the actual meaning of first aid as it applies to employes of a telephone company.

A. In our opinion, first aid to an operating telephone company means the provision of immediate, temporary care by a trained person in the event of an accident or sudden illness before the services of a physician can be obtained.

The training of telephone workers to do the proper thing at the right time often saves a life. By the same token, knowing what not to do in an emergency is equally important.

• • •

Q. We would like to know if it is considered a good practice to insist that a wall niche be provided in new houses when telephones are to be installed in a hallway?

A. This was a common practice back when the separate bell box telephone was in use, but it has been practically discontinued.

We suggest the use of the hanging-handset-type telephone as the most suitable for installation in halls, kitchens, and similar locations.

• • •

Q. What will cause a telephone to give an electrical shock to the user?

A. This is generally due to an insulation breakdown in the telephone instrument. It may be caused by a turned cord connection lug, pinched wiring, a ground return path being provided because the telephone has been located at or near a grounded object such as a radiator, metal pipe, electric table lamp, etc.

A damp concrete floor may also cause shock in some cases. Shocks can also be caused by foreign potentials which may be due to physical contact between the power and telephone plant or induction and rise in ground potential resulting from a fault on nearby high tension power lines.

V V

>> How busy we are is not nearly so important as why we are busy. For example, the bee is praised while the mosquito is swatted.

Inflation and the Telephone Company

By KEITH S. McHUGH
President
New York Telephone Co.

This is an address presented by McHugh before the New York State Chamber of Commerce in New York City on June 5. While many of his remarks concern his own company, they describe the serious plight of every telephone company brought on by inflation.

MARK TWAIN is supposed to have said that everyone talks about the weather but no one does anything about it. Some say the same thing about inflation, but I doubt if this is true.

American business has both said a good deal about the dangers of inflation and done something constructive about it. Our New York Chamber of Commerce, for example, has said some pretty penetrating things about inflation, including its recent report on sound money. The United States Chamber of Commerce, through its Committee on Economic Policy, and other business groups, and many economists have made important contributions in this area.

But what business has done is more important than what it has said. Business has proved during World War II and since Korea that, given a little time, it can manage an economy that provides both guns and butter. No one can look dispassionately at what has happened since June, 1950, without being proud of the job business has done in increasing capital, plant capacity and output of goods and services for both defense and civilian purposes. This has been the real force tempering the height of the wave of inflation.

It would have been so easy during these last two years for businessmen and investors to crawl into their shells and play it safe, to refuse to expand as capital costs of expansion rose higher and higher. But they did not choose this course. Perhaps they could not be sure that all their competitors would follow the same path. Perhaps, having grown up in a free economy, they were not at all sure that the conservative course was really "safe." Whatever their business reasons, you may be sure that they believe deeply in their country; despite their concern over many policies of their government, they could never sell America short. The driving urge to expand and improve so that one can hold one's place in the market or better it is very strong. This force is the natural derivative of our heritage as free men. It has made America the greatest industrial nation in history.

And the American consumer played a key role in tempering the wild tide of inflation. It did not take him and her long to clamp down on the rate of household expenditures after the brief outburst of scare buying in the summer of 1950.

Today, despite a steady build-up in defense production, there is no substantial concern over shortages, and free markets are becoming the rule. In certain industries there is even a dearth of buyers. This, to be sure, is painful, but it is evidence of improved economic health. The amazing vitality of American business has again confounded those who would like to see it fall flat on its face.

I do not propose to discuss the causes and effects of inflation, or continue the debate on whether we should have had tight direct controls or more effective indirect controls. My contribution to your information on inflation will be limited to outlining certain specific important problems which it has created for your telephone company. Each of you has had to meet the problems of inflation in your own business, but you may be interested in the plight of a fellow sufferer who is up against some ground rules quite different from most of yours. In any case you have a stake in this because all of you are dependent on fast and reliable communications.

K. S. McHUGH

The record of the New York Telephone Co. during the past 12 years is much like that of other telephone companies. During World War II telephone materials went to war and we could make only limited additions to our plant. Our growth could not keep pace with demand, and by the end of the war thousands of orders were held up for lack of facilities. Since then we have faced the greatest demand in our history. The combination has produced a rate of expansion almost beyond belief. In our company alone we have added nearly three million telephones since 1939—most of them during the last six years; we have doubled our plant dollars and we have almost doubled the amount of our capital. Gross new construction has exceeded a billion dollars, and since 1945 alone has required about 600 million dollars of new capital. The demand for new and better grades of service is still continuing at a very high rate, for this Empire State of ours is big and fast growing. We expect to put more than 190 million dollars into plant and equipment this year alone. We hope to build about as much again next year. This level of construction requires about 100 million dollars of new capital each year.

During this last decade we have been subject to a kind of triple squeeze: The squeeze of rising operating costs, wages, materials and supplies — the squeeze of soaring taxes — and the squeeze of high construction costs.

None of these phenomena is new since all in business feel them in greater or lesser degree. Our squeeze in operating costs, especially wages, is heavier than most because we have a relatively higher labor factor than most industries. The squeeze in taxes is familiar to all, but it is worth mentioning here because the taxes we paid last year—110 million dollars—are now

over three times what they were in 1939. Our telephone users also paid 92 million dollars in excise and sales taxes. Thus, the tax bite per average telephone per month is now $3.20 compared with about $1.40 before the war. This is equivalent to three-fourths of our wage bill and is over four times the amount of our dividend. Thirty-two cents out of every dollar the New York user paid for his telephone service in 1951 went for taxes. No major industry except distilling and tobacco carries a heavier burden.

With our operating expenses steadily going up faster than revenues, and with the mounting burden of taxes, we were compelled, as was almost all business, to seek some relief in higher prices. The (New York) public service commission after long hearings has twice granted us an increase in rates—once in 1950 and once in March of this year. Together, these increased our rates an average of 15 per cent. They have been our only increases in prices in more than 20 years. The fact is that, measured in terms of the price changes in other civilian goods and services, telephone service now costs 40 per cent less than it did. In total dollars these rate increases bring in only about two-thirds of the increases in wage rates alone over the last 12 years. Of course, the costs of materials and supplies too, have increased greatly during the period and there have been increases in other costs.

There has been no disposition on the part of the public service commission, or of most commissions throughout the country, to reject increases in costs of operation and taxes as a basis for higher rates, where the company showed that these increases have adversely affected earnings. The difficulty on this point has been the delay, the time lag in getting the required adjustment in rates. At best, the present day rate case is a long drawn out and laborious process; at worst, the patient may be very sick indeed before relief is granted.

While increases in operating costs and taxes (the first two big squeezes) have been recognized by most regulatory authorities, the third squeeze—the high construction cost of plant replacement and expansion—has not generally been recognized. Here the prevailing practice has been to rest upon a formula which has been in wide use for the last 20 years or so. For convenience, we call this the "original cost less depreciation" formula. This concept assumes that the original cost of the property, less accrued depreciation, represents the rate base on which the company should be allowed to earn. To this amount, of course, is frequently added something for working capital, but for convenience I will pass over this item as it is small in comparison with the plant.

I will not go into the merits or demerits of this historic formula as it affected telephone rates and earnings during the early part of the last 20-year period when costs and prices were reasonably stable. But it is at once apparent that it works a severe hardship during periods of rapidly rising costs. I can illustrate with our own case. Our company has property on its books which cost around 1 billion 600 million dollars. About one-half of this plant was built at prewar prices and most of the remainder at postwar prices. We know as a fact that replacements of prewar plant—much of this will have to be replaced within the next 10 years—will cost up to twice as many dollars as it cost when it first went on our books. In other words, a dollar today will build only a little over one-half of the revenue producing telephone plant that it built before the war. This is equally true as to growth plant, that is, a dollar expended for growth today will build not much more than one-half the plant that it built before the war.

This phenomenon also appears in many other businesses. But there are two big differences. First, we happen to require a disproportionately large plant investment to produce a dollar of telephone revenue—our plant dollars turn over only once in three years in relation to sales. Second, most other industries have been able to increase their prices and realize earnings sufficient to finance a large part—if not all—of their replacement and expansion out of earnings. Examples of successful companies which have been able to do this are legion.

And the stockholder of such companies has not fared too badly. Dollar earnings have increased greatly. Dividends could be, and were, increased. Larger retained earnings met the needs for additional capital. On the average, the dollar dividends of Dow Jones Industrials, for example, have more than doubled during this period and their market values and book equities are about twice what they were. But the telephone company's dividend has not increased; there has been no appreciation in the market value of its stock, and its book equity shows only a small increase. Finally, the telephone company has been able to meet only a minute proportion of its postwar capital needs from earnings.

Our problem points up a deficiency in the conventional method of accounting for business costs. The fact is that standard systems of accounting for depreciation provide a wholly inadequate measure of the capital consumed, because they do not reflect the effects of high costs of new construction to replace low cost plant. There is a real additional cost of capital consumption not presently reflected in expenses. Failure to recognize it may affect the integrity of the earlier investment committed to the business. Recognition of these hidden capital costs must be given so that they can be reflected in proper prices.

In short, there has been a real squeeze on the prewar shareowner of those businesses whose present earnings do not reflect the increase in investment values caused by inflation. The prewar bondholder is, of course, squeezed as are all other senior security holders. In our case the older stockholder sees the new stockholder adding only a little more than half the telephone capacity per share purchased, but sharing equally in the earnings.

Some have urged that this plea for the older shareowner seeks to put him in a preferred class, one whose equity investment would be free from the effects of inflation, except for the effect of higher personal taxes. That is not the point. Far from being in a preferred class, such shareowner took all the entrepreneurial risk, but in fact got no more protection against inflation than the man who bought senior securities or one who kept his money in the savings bank. It is well known that only those who have invested wisely in commodities, in farms or farming, in certain special classes of real estate, and in common stocks of companies able to adjust prices, have protected their investment and their real income. I believe that over the long pull these risks of telephone shareowners must be recognized on approximate equality with those of other entrepreneurs in successful industry, or such shareowners will seek the greener grass of other investment pastures. There are several ways of achieving this equality. The simplest and most logical is for the regulatory authorities to admit the obvious fact that telephone plant has a current value greater than its depreciated book cost, and to permit a reasonable rate of return on this value. Only a few states now have so-called fair value statutes and not all of those which have them follow them for rate-making purposes.

I am reminded of an incident which one of my associates witnessed. Shortly after the war, one of the railroads joined with others in applying for an increase in rates. The local chamber

(Please turn to page 37)

You **can** win at this game!

Keeping a telephone system in step with your community is a lot like "pin the tail on the donkey". You get little warning as to where new subscribers will "pin" homes or factories on your exchange maps.

What to do? Too much equipment hurts net revenue. Too little means overloads, loses potential revenue and damages public relations.

The best answer is equipment that can be expanded with minimum engineering and cost, such as North All-Relay Exchanges.

As expandable as your needs!

North Strip Jack-In features make the addition of a few lines or hundreds a simple and economical matter. You get more lines with less installation labor, more lines in less floor space, more traffic without service cutouts. For a system that's *always* ready for quick expansion, install . . .

NORTH ALL-RELAY EXCHANGES

THE NORTH ELECTRIC MANUFACTURING COMPANY

Originators of **ALL RELAY** Systems of Automatic Switching

601 South Market Street, Galion, Ohio, U.S.A.

Automatic Eric
makes your cer

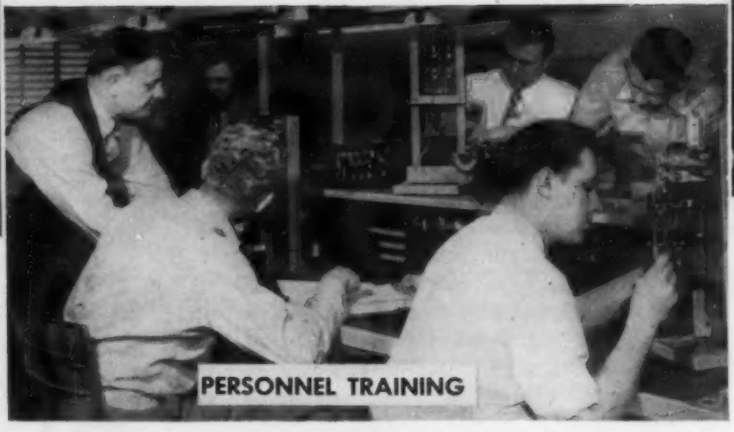
TRAFFIC SURVEY

FINANCING

EQUIPMENT PLANNING

SUBSCRIBER EDUCATION

TOLL SY
PLANNI


PERSONNEL TRAINING

INSTALLATION

OPERATING ENGINEERING

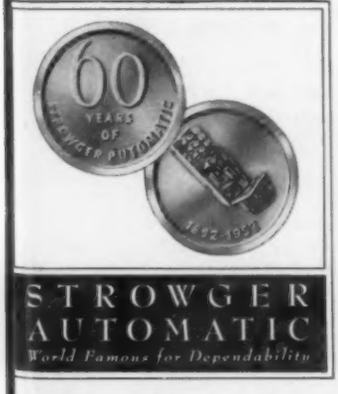
ric *Service*

ersion SIMPLE . . . SAFE . . . SURE

When you convert to Strowger Automatic,
we help you in every way possible.
We make *sure* everything is RIGHT!

Our engineers survey the traffic and operating requirements
of your exchange to determine the equipment you need.
Then, if your rate structure is inadequate,
we help you apply for upgraded rate adjustments.
Should you wish,
we can help you with financial arrangements, too.
We plan your equipment individually,
help plan your toll system, and train your technical personnel,
(or we supply textbooks for on-the-job training).
Our demonstration units
prepare your subscribers for automatic service.
Our experts install your new equipment,
set up a time-saving record system, and assign numbers.
After cutover, our operating engineers are always at your call
—ready to show you
how to get the most out of your equipment.

Our service guarantees simple, safe, sure conversion
—just as Strowger Automatic's 60-year record
insures dependable operation.
If you're not receiving these services, write us today.
They're available to all Automatic Electric customers.



STROWGER
AUTOMATIC
World Famous for Dependability

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems
Makers of Telephone, Signaling and Communication Apparatus . . . Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions: Automatic Electric Sales Corporation
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

Courts and Commissions

Rates for 5.7% Return O.K.'d For Nebraska Company

Cuming County (Neb.) Telephone Co., Wisner, recently was authorized to raise rates for all classes of service. In ordering the increases, the Nebraska Railway Commission said that new rates would produce a return of 5.7 per cent calculated on an adjusted net book rate base of $129,378. The former return was 3.8 per cent.

Based on present development of 1,470 stations, the new rates will produce additional gross revenue of $420 per month or $5,040 per year. The company operates two exchanges, both dial operated, at Wisner and Beemer. It is incorporated with 1,539 shares of stock outstanding at a par value of $40 per share.

New rates and increases:

	Rate	*Increase*
One-party business	$4.75	$ .50
Two-party business	3.75	.50
One-party residence ...	3.25	.50
Two-party residence ...	2.75*	....
Four-party residence...	2.25	.25
Rural	2.75	.25

*New class of service

Rates are gross and include a 25-cent prompt payment discount.

V V

Increases Ordered for Three New York Independents

New York Public Service Commission has authorized the Hermon, Edwards and Citizens Telephone Companies, all in St. Lawrence County, to increase rates, effective June 1, to make possible continuation of adequate service by the three companies.

The increases will produce approximately $6,000 additional revenue annually for the three companies, which serve about 1,000 subscribers. The old and new rates of the three companies are:

Hermon Telephone Co., serving 325 subscribers in and near Hermon: Business, individual, from $3.50 to $4.50; two-party, from $3.25 to $3.75; 10-party rural, from $2.50 to $3.25; residence, individual, from $2.50 to $3.00; two-party, from $2.25 to $2.75; 10-party rural, from $2.00 to $2.25. Total annual estimated revenue increase is $1,240.

Edwards Telephone Co., serving 300 subscribers in and near Edwards: Business, individual, from $3.50 to $5.25; two-party, from $3.25 to $4.50; five-party and 10-party rural, from $2.50 to $4.00; residence, individual, from $2.50 to $3.25; two-party, from $2.25 to $3.00; five-party and 10-party rural, from $2.00 to $2.50. Total annual estimated revenue increase is $2,517.

Citizens Telephone Co., serving 365 subscribers in and near Hammond and Rossie: Business, individual, from $3.50 to $4.00; 10-party rural, from $2.50 to $3.00; residence, individual, from $2.50 to $3.25; 10-party rural, from $2.00 to $2.50. Total annual estimated increase is $2,200.

V V

Medina (N. D.) Company Granted Rate Increase

Medina (N. D.) Telephone Co. has been granted rate increases designed to yield the company additional gross revenue of $1,650 annually.

North Dakota Public Service Commission authorized town business rates to be increased from $3.00 to $5.50 per month; town residence, one-party, from $2.00 to $3.25; town residence, two-party, from $2.00 to $2.50; and switching service for rural customers from 50 cents to $1.00.

The new rates will become effective when the company converts to dial service.

V V

Refuses Rehearing on Colorado Rate Increase

Colorado Public Utilities Commission announced a unanimous decision on June 20 denying the application of the city and county of Denver for a rehearing on the new telephone rate increases of Mountain States Telephone & Telegraph Co. (TELEPHONY, May 24, p. 28).

The commissioners, Joseph W. Hawley, chairman; Ralph C. Horton and John H. Winchell, declared that no error was committed in the long and involved hearings that resulted in approval of the new rates. The commission said "no useful purpose would be served by granting a rehearing."

It is believed the case now will be taken into district court and possibly to the state supreme court.

V V

Asks Increase in Ohio For 46 Exchanges

Ohio Central Telephone Corp., Wooster, has asked Ohio Public Utilities Commission to increase its rates in 46 exchanges in 16 counties.

The proposed new rates for Wooster raises the rate for single-party business telephones from $7.00 to $9.75, private residential from $3.50 to $5.25, five-party residential $2.50 to $4.00, and 10-party rural from $2.50 to $3.25.

V V

Southeastern Seeks Raise In Georgia Revenues

Filing of a petition for authorization of an increase in the monthly charges for local telephone service in Georgia by the Southeastern Telephone Co., Tallahassee, Fla., was announced on June 7.

A hearing before the Georgia Public Service Commission was planned for June 26.

V V

Permit Rate Increase for Nebraska Independent

Permission to raise rates on all classes of service has been granted the Plainview (Neb.) Telephone Exchange by the Nebraska Railway Commission. New rates and increases granted are:

	Rate	*Increase*
One-party business	$5.50	$1.00
Two-party business	4.25	.50
One-party residence ...	3.00	.50
Two-party residence ...	2.75	.50
Three-party residence ..	2.50*	....
Rural metallic	2.50	.25
Rural grounded	2.00	.25
Service station	1.00	.40

*New class of service

Rates are net as the company does not have a prompt payment discount plan. Based on present station devel-

THE RIGHT TOOLS — right when they're needed

For prompt, efficient completion of telephone line jobs, make sure your linemen have the right tools—*right* when they're needed.

And, for the easiest way to obtain this equipment, make sure you order from Graybar. On a single transaction, you can get pliers, wrenches, trimmers, shovels, and all the other tools needed for line construction and maintenance—even trailers, and splicing carts.

By ordering through Graybar, you save the time and expense of multiple inquiries. You get products that are dependable and give long service-life—products that have been tested and accepted by companies like yours throughout the nation.

Remember, too, that your local Graybar Representative is a convenient source of information on all of the other materials required by the independent telephone industry. For help in solving unusual technical problems, you can arrange for the help of an experienced Graybar Outside Construction Specialist or Telephone Specialist.

Owned solely by its operating and retired personnel, you can always expect from Graybar that extra bit of attention of folks who are anxious to please. *Graybar Electric Company, Inc. Executive offices: Graybar Building, New York 17, N. Y.* 215-237

Everything in Telephone Supplies
Via GraybaR

IN OVER
100 PRINCIPAL CITIES

POLES · CROSSARMS · INSULATORS · STRAND · CONNECTORS · HARDWARE · PROTECTIVE DEVICES · TOOLS

opment (983 stations) the new rates are estimated to produce $455 per month or $5,459 per year. According to the commission's order this will produce a net return of 6.5 per cent upon an adjusted net book rate base of $56,664.

The commission found that the company had rehabilitated its plant and was furnishing good service. New common battery telephones have been installed and the urban distribution system has been placed in first class condition. Farm lines are now being rebuilt.

The company faces substantial increases in taxes, wage costs and other expenses. Before June, 1951, it was not complying with provisions of the Fair Labor Standards Act but has now been forced to do so after an official inspection was made of its records. Under the terms of the Minimum Wage Law this will result in an immediate cost increase of $111 per month in operators' wages alone. In addition the enforcement division of the FLSA informed the company that it was indebted to its employes in an amount of $8,000, including penalties.

V V

Kansas Rate Application

Potwin (Kan.) Mutual Telephone Co. recently submitted an application for increased rates to Kansas Corporation Commission. Increasing expenses and the need for more lines to the new town addition were given as reasons for the raise.

V V

Vote Raise for Commission

A bill to raise the salaries of the three members of the Louisiana Public Service Commission from $6,000 to $8,500 a year was passed on June 16 by the Louisiana House of Representatives and sent to the state senate. Rep. James Beeson, who sponsored the bill, declared that "the work of the commission has grown tremendously in recent years and what was formerly a part-time job has developed into not only a full-time job, but a very difficult and a highly responsible one."

V V

REA to Supervise Construction Under Loan; Complaints Stop

Subscribers dropped their complaints against the Old Town Telephone System at a North Carolina Utilities Commission hearing on June 24, after J. Lee Keiger, president of the company, convinced them they soon would be getting the service they wanted. They had asked the commission to require Old Town to improve its service or to give its franchise to Southern Bell Telephone & Telegraph Co.

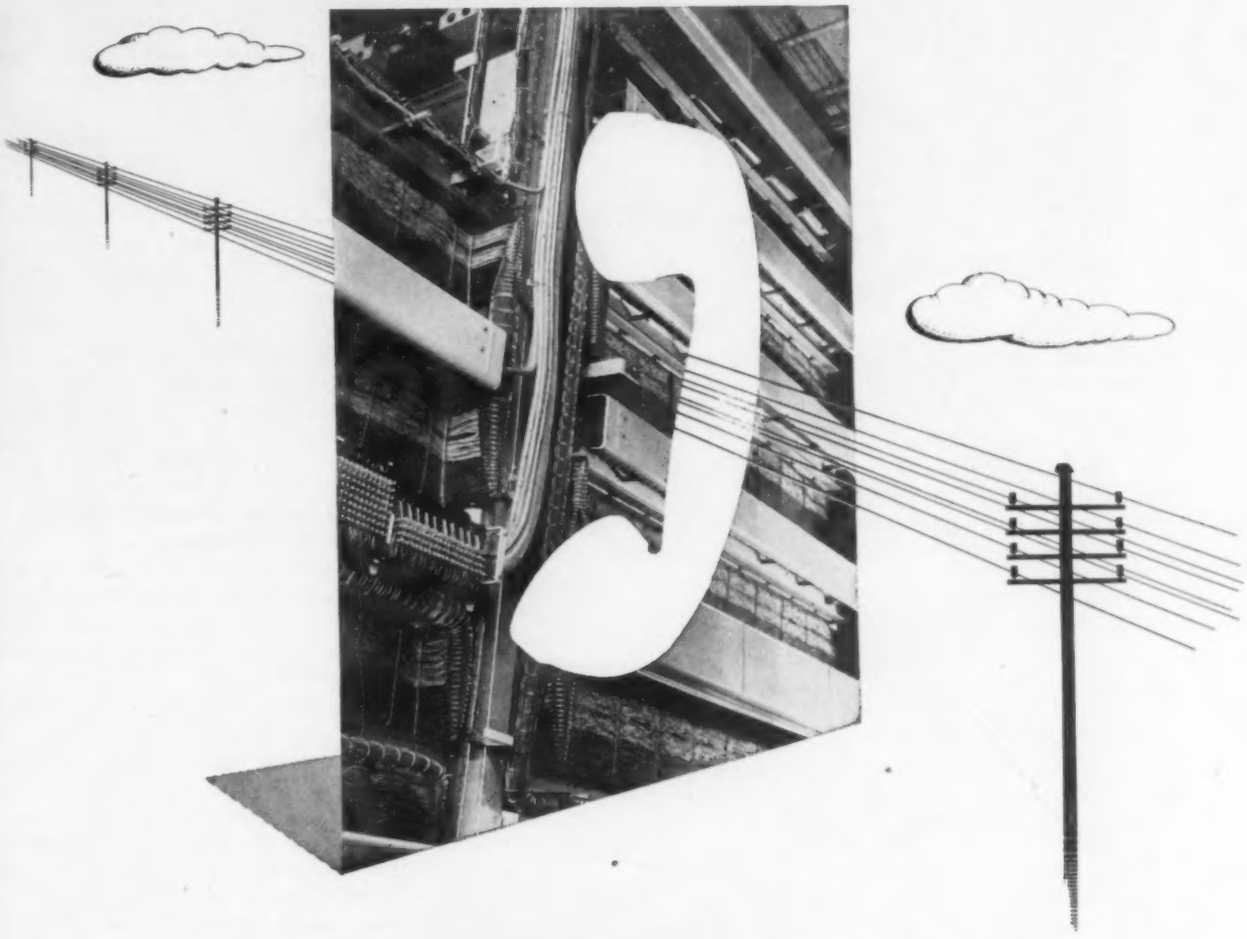
Keiger testified that he had reached a loan agreement with the REA providing for a $250,000 loan immediately and a maximum loan of $1,000,000. He said negotiations for the loan had been under way for two years and that the loan was approved on condition that the REA supervise the entire reconstruction program—the engineering, materials and construction—and on condition that the company provide

Minnesota Independents Get Harvest of Increases

Minnesota Railroad & Warehouse Commission from June 10 to 20 granted rate increases to the following Independents (figures shown are before and after rate raises; per cent return is on new rates):

	Operating Revenue		*Net Income*		*Original*	*Per Cent*
June 10:	*Before*	*After*	*Before*	*After*	*Plant Cost*	*Return*
Deer Creek Telephone Co.	$ 5,778	$ 7,699	$ 23	$ 1,273	$ 33,084	3.85%
Hancock Telephone Co.	18,148	20,911	1,497	2,244	54,745	4.10
Wolverton Telephone Co.	7,675	10,249	365	867	19,418	4.47
June 11:						
Lakedale Telephone Co., Annandale	52,205	57,623	7,381	10,796	192,737	5.6
Madelia Telephone Co.	40,084	42,871	3,916	5,673	101,845	5.57
Midwest Telephone Co., Parkers Prairie	25,868	33,553	4,149	7,902	158,047	5.0
Osakis Telephone Co.	19,019	24,985	—2,733	1,917	42,635	4.5
		26,387*		6,840*	114,030*	6.0*
Pelican Telephone Co., Pelican Rapids		29,967		2,617		
		36,795*		8,038*	165,550*	4.86*
Vergas Telephone Co.	6,311	8,228	761	1,784	34,147	5.22
June 12:						
Blackduck Telephone Co.	10,483	13,513	997	1,850	50,196	3.68
Hutchinson Telephone Co.	94,607	113,678	16,649	26,800	470,000	5.7
Long Prairie Telephone Co.	48,439	50,816			113,728	5.94
Mankato Citizens Telephone Co.	532,519	627,009	99,975	134,693	2,652,697	5.26
McLeod County Telephone Co., Glencoe	134,160	154,064	15,215	23,723	517,136	4.59
Northland Telephone Exchange, Hill City	12,034	16,000	—341	2,346	41,221	5.69
Ruthton Telephone Co.	6,538	9,151	7	880	17,828	4.93
Wabasha County Telephone Co., Plainview	95,341	108,963	17,939	19,271	421,203	4.57
(Wabasha after Waldorf conversion)		110,064		20,405	441,260	4.63
June 13:						
Aitkin Deerwood Telephone Co., Aitkin	129,357	141,714	21,445	22,949	418,441	5.48
Dunnell Telephone Co.	9,492	11,952	335	2,687	58,376	4.60
Empire Telephone Co., Grove City	41,700	44,778	6,473	6,740	164,804	4.09
Farmers Mutual Telephone Co., Cerro Gordo		21,985*		4,047*	190,316*	2.13
Granite Falls Telephone Co.	46,203	55,736	3,449	7,593	145,700	5.21
LaCrescent Telephone Co.	14,309	19,321	1,069	2,602	43,842	5.94
Lonsdale Telephone Co.	10,737	12,810	1,070	2,041	43,345	4.71
Winona County Telephone Co., Lewiston	44,211	51,482	7,284	8,082	207,485	3.89
Worthington Telephone Exchange Co.	178,525	202,220	33,160	40,183	700,124	5.74
June 19:						
Deer River Telephone Exchange	29,815	33,818	2,286	4,137	84,286	4.91
June 20:						
Minn-So-Dak Telephone Co., Hendricks	13,101	17,904	418	2,073	38,728	5.35

*Indicates after conversion to dial.



LONG DISTANCE OR LOCAL

There are BICC cables for every type of telephone system whether long distance or local. The range includes main and distribution cables, switchboard cables and wires, and railway signalling and supervisory control cables.

Further information is contained in Publications No. 279 on BICC Telephone Cables and No. 302 on Terminal Boxes for Telephone and Auxiliary Circuits, which are available on request.

BICC terminal boxes are available for terminating, jointing and sub-dividing telephone circuits, as well as auxiliary wiring generally. These boxes can also be used for remote control, indicating and signalling circuits as associated with switchgear and control gear installations.

B.I. Callender's

TELEPHONE CABLES AND TERMINAL BOXES

BRITISH INSULATED CALLENDER'S CABLES LIMITED
NORFOLK HOUSE, NORFOLK STREET, LONDON, W.C.2, ENGLAND
Branches and Agents throughout the World

free toll service; service for everyone who wants it; and two and four-party lines instead of eight and 10-party lines the company has now.

The subscribers had complained that the toll charges from one community to another and to Winston-Salem are unfair and that there are not enough stations to serve the communities properly. After hearing Keiger they said they were satisfied, and a spokesman said many persons who had had their telephones taken out were having them put back in again.

V V

Uniform Rate Approved for Exchange in Nebraska

A uniform monthly rate of $3.00 net for all classes of service has been authorized for the St. Helena exchange of the Wynot (Neb.) Telephone Co. by the Nebraska Railway Commission.

The exchange is being converted to dial operation in July and the new rate will become effective then. St. Helena will be a satellite exchange receiving assistance service out of Wynot. Extended and common exchange service will be provided at both exchanges.

There are now 62 telephones at St. Helena operating on three lines out of Wynot. Subscribers own 48 of these and the company 14. Present monthly rates for magneto service are $1.75 net for subscriber-owned stations and $2.25 net for company-owned stations. Under the new rates all stations will be owned by the company. The present three distribution lines will be converted to 10 with the cutover to dial service.

V V

Rate Increases Sought by Virginia Independent

Tidewater Telephone Co., Warsaw, Va., asked the Virginia Corporation Commission on June 20 for permission to increase rates on its King George and King William exchanges.

A hearing was set for July 25 on the request.

The increases proposed would raise from $4.25 to $5.00 one-party business rates and from $3.25 to $4.00 the one-party residence rate.

V V

South Dakota Incorporation

A charter of incorporation has been issued to the Cloverleaf Telephone Co., Colome, S. D.

V V

Georgia Co-op Gets OK

Georgia Public Service Commission on June 11 gave approval to the application of the South Georgia Rural Telephone Corp., a cooperative, to serve rural areas in three Georgia counties, Brooks, Berrien and Cook (TELEPHONY, May 24, p. 35).

V V

Ohio Company Requests $294,441 Increase

Newark (O.) Telephone Co. on June 26 asked the Ohio Public Utilities Commission for authority to increase its rates by $294,441.

The company has exchanges in Newark, Granville, Gratiot, St. Louisville and Hanover.

The company said the increased revenues would raise the rate of return on its investment from 4.35 per cent to 5.57 per cent. The company values its investment at $4,539,437.

The application said the company needed increased revenues to pay for a recent $37,000, annual wage increase to employes and for a new construction program.

The new rates sought would vary in the five exchanges. In Newark, the one-party business rate would be increased from $6.00 to $10.00. One-party residence rates would be increased from $3.00 to $5.00. Four-party business would be $5.00 instead of the present $4.00, and four-party residence rates would be $3.00 instead of the present $2.00.

V V

Asks Dismissal of Illinois Rate Case

Charles Blachinski, Kewanee, Ill., attorney, has filed a motion asking for dismissal of the General Telephone Co. of Illinois request for a $1,922,000 rate boost (TELEPHONY, Apr. 12, p. 32).

Blachinski told Illinois Commerce Commission on June 25 that a raise of rates would violate a law which prohibits more than one rate increase in two years.

A $1,183,000 increase was granted the company last Aug. 7.

Blachinski was given until July 15 to file a brief, and the company until Aug. 1 to answer. The hearing was continued without date, and no more hearings are expected unless the commerce commission members want to examine witnesses themselves.

V V

Increase Granted New York Independent

Rate increases ranging from five cents to $1.50 a month were granted Oneida County Rural Telephone Co., Holland Patent, N. Y., on May 28 by New York Public Service Commission.

The company serves about 600 customers in the village of Holland Patent and nearby rural areas north of Utica.

Postpone $244,000 California Hearing Until September

A hearing on an application by California Water & Telephone Co., Monrovia, for a $244,000 annual increase in telephone rates was adjourned until September on June 23 by Commissioner Justus Craemer after a commission engineer, John J. Doran, had presented figures on company earnings.

Doran testified the company's rate of return in the year ended April 30, 1951, was 5.36 per cent and that it was 5.32 per cent the following year. The company reported a 5.30 per cent return in 1951 in support of its application.

The company is seeking an interim increase.

V V

Commission Lowers Refund Order in Wisconsin

Wisconsin Public Service Commission directed Wisconsin Telephone Co. on June 26 to refund $456,065 to subscribers in 14 Wisconsin communities before Oct. 1, 1952.

The refunds originally were ordered for 15 cities on March 6, 1951 (TELEPHONY, Apr. 5, p. 22). The company appealed to Dane County Circuit Court, contending the amount was too high, and the case was remanded to the commission with direction to make further study before the final order was issued. This the commission did and the June 26 amended order was the result.

V V

Approves Lower Increase In Arkansas for SW Bell

Arkansas Public Service Commission issued an order on June 20 to make permanent a Southwestern Bell Telephone Co. annual rate increase of $3.2 million, effective July 11 unless appealed to the courts.

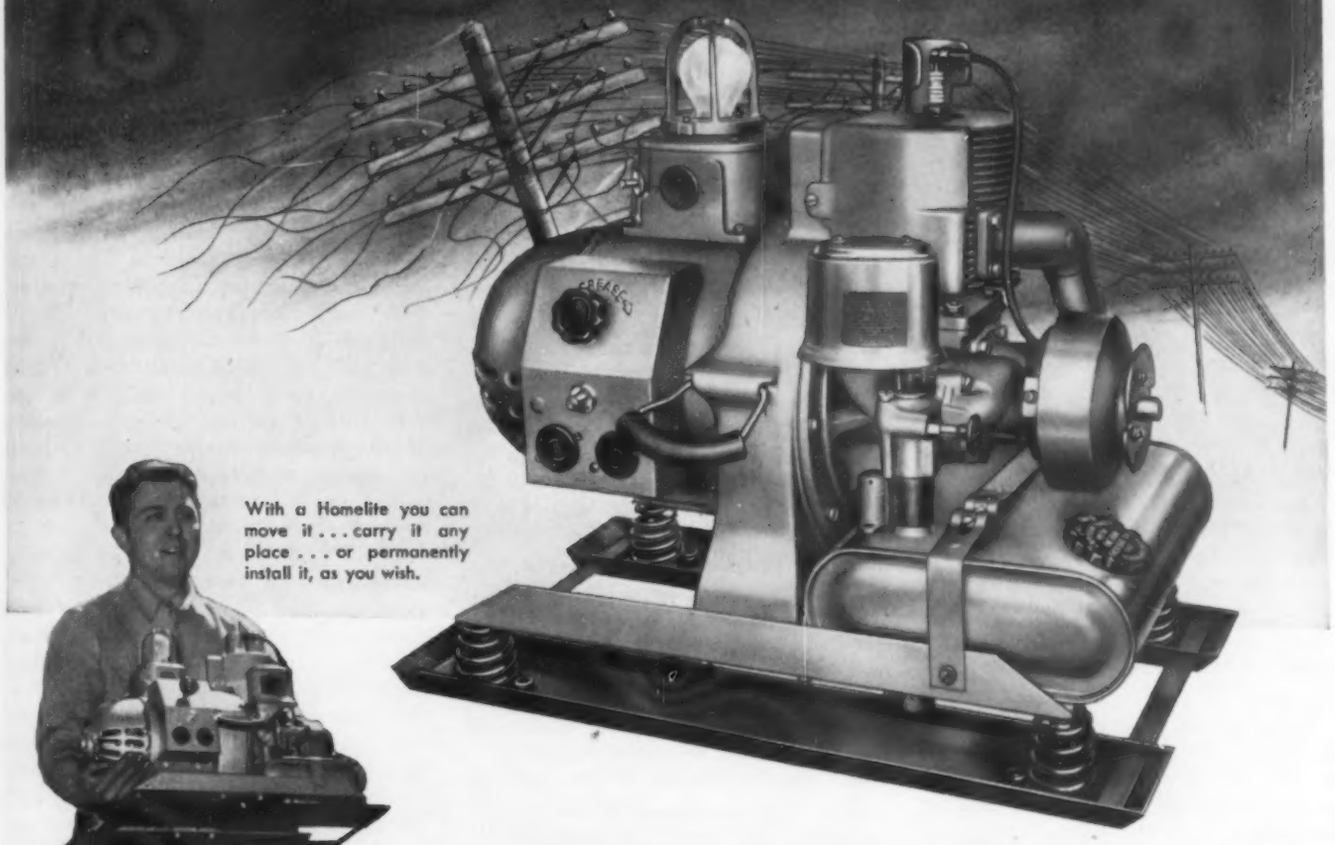
This increase, authorized by the state supreme court, would be less than the $4.6 million Bell requested and has been charging under bond since September, 1950.

Customers, therefore, are due refunds, which the commission order said must be mailed within 60 days. The authorized increase is about $1.00 a month less for business telephones and 50 to 75 cents less for residential telephones than Bell requested, and has been charging under bond.

Little Rock City Attorney O. D. Longstreth said no decision had been reached on whether an appeal of the order would be taken by Little Rock and Ft. Smith, which had previously argued that rates were discriminatory.

Meanwhile, the commission has on

Why a HOMELITE is JUST RIGHT for Emergency STANDBY Power



With a Homelite you can move it . . . carry it any place . . . or permanently install it, as you wish.

It's carryable . . . it's dependable. You can get it into action, promptly after power failure any place you need it . . . in your main station or in relay stations. But of even greater importance, with a Homelite Standby Unit you have the power that meets your requirements best.

Homelite engineers have long been specialists in developing carryable gasoline-engine-driven generators. They have the know-how to analyze your requirements. And they have the facilities to produce the standby units that are *just right* for what you need.

Why take a chance without standby power? Why take a chance with anything less than a Homelite? Write and one of our specialists will discuss your standby requirements without obligation to you.

Manufacturers of Homelite

Carryable Pumps • Generators

Blowers • Chain Saws

PERFORMANCE · DEPENDABILITY · SERVICE

HOMELITE CORPORATION

1807 RIVERDALE AVENUE • PORT CHESTER, N. Y.

file another $1.9 million annual rate increase requested by Bell several weeks ago (TELEPHONY, May 10, p. 36). The commission refused to accept Bell's bond, which would have permitted the hike to go into effect immediately, with hearings to determine the reasonableness of the increase scheduled later.

V V

Asks Increase for 23 Cities in Kentucky

Kentucky Telephone Corp. applied for a $727,000 annual rate increase on June 25.

The company serves Lexington, Ashland, Hazard, and 20 other central and eastern Kentucky cities. It has about 57,000 telephones.

Kentucky Public Service Commission set Aug. 5 for the opening of hearings on the request.

Higher wages, increased taxes, and the costs of a two-year construction program were cited as reasons for a raise. There will be no increase in long-distance tolls. The 40-cent-per-quarter-mile line charge on rural telephones outside the base-rate areas of cities will not be changed.

Kentucky Telephone Corp. (formerly Lexington Telephone Co.) merged with Ashland Home Telephone Co. Apr. 1. It is a subsidiary of General Telephone Corp.

Both the Lexington and Ashland companies were granted rate increases last year.

The proposed rates will provide the company with a 7 per cent return on its investment, the application said, enough to attract 3 million dollars of new capital from the sale of securities to help finance its construction and rehabilitation plans.

V V

S.C. Company Asks Raise For Five Exchanges

Southeastern Carolina Telephone Co., Fairfax, on June 25 asked South Carolina Public Service Commission for authority to increase its rates at five exchanges.

Increases are being sought at Ehrhardt, Fairfax, Hollywood, Olar and Yemassee.

V V

West Virginia Company Buys Another, Plans to Modernize

Inwood (W. Va.) Telephone Co. has been sold to G. H. Park of the Duncan Telephone Co., Thomas, it was announced recently.

Park said his company will modernize the system with dial equipment and improved lines.

Testing Instrument Deserves Study

(Continued from page 16)

resistance used. Additional columns are often provided to take care of the case when the battery is a volt high or a volt low. A half-volt variation in the battery will cause about 1 per cent error. That may not be too serious unless a very accurate measurement is required, as when locating cable trouble. In that case the voltage should be verified and the formula used. (Yes, in the absence of a bridge the voltmeter can be used to locate cable trouble or toll line trouble with fair results.)

There is another good method of measuring resistances below a few thousand ohms, but it requires, in addition to the voltmeter, a calibrated rheostat which may be set from "0" to several thousand ohms in steps of one ohm. (This may be somewhat expensive.) The test is first made with the voltmeter in the usual way, using the resistance that gives the best results, and the deflection is marked with the manually operated marking needle that is found on most meters. A key is then operated which connects the testing circuit to the rheostat instead of to the line being tested. The rheostat is then adjusted so that the voltmeter needle coincides with the marker needle and the value of the unknown resistance is read from the setting of the rheostat.

A recently developed test desk meter has some interesting features. There is a 0-120 black scale which is used with the 100,000-ohm meter and a 100-volt battery. The meter is changed to 20,000 ohms by shorting 80,000 ohms of its series resistance; therefore, another scale is required. This is a red 0-24 scale above the black scale which is used with a 20-volt battery. The same red scale and the 20-volt battery are used with the 1,000-ohm meter as the change from 20,000 to 1,000 is made by means of a shunt. The third scale is also red and is located below the black scale. It reads from 0 to 400 milliamperes. A rheostat such as we have described is also furnished.

Since each volt of deflection indicates a definite outside resistance, why not add an ohm scale to the meter and read ohms directly without calculation or chart? This is sometimes done and the instrument is called an ohmmeter or a volt-ohm meter. However, this problem is not as simple as it may at first appear to be. A separate ohm scale would be required for each resistance used, making a total of four or more scales on the meter, which would be confusing.

The ohm scales would not be correct if the battery was not at its specified voltage. The ohm scale is a somewhat unsatisfactory scale to read. It does not run from 0 to 100 but from 0 to *infinity*, which is a long way, including as it does all possible positive numbers. The result is a very confusing scale of unequal parts. One smallest division may mean five in one part of the scale and 10, 25 or 50 in other parts of the scale. The left end of the scale is usually marked in megohms. Experienced testmen prefer not to use an ohm scale. However, an ohm scale is commonly found on a portable meter.

One type of portable meter that we have used solves some of the above problems in a very ingenious manner. Two resistances are provided, one of which is 10 times the other. The ohm scale is associated with the higher resistance and, when used with the lower resistance, its reading is divided by 10. A potentiometer is used to keep the battery voltage "on the dot." The voltage scale is 0 to 100. As it would be impracticable to enclose a 90 or 100-volt battery in the case, a very small 22.5 volt battery is used. The meter is then so calibrated that 22.5 volts causes a 90-point deflection. Calculations are made by assuming that the battery is 90 volts, and the deflection as read. Thus, a testman accustomed to a standard meter will not have to change his usual method. However, the low actual voltage and the choice of only two resistances are disadvantages.

It pays to know your meter.

(To be continued.)

V V

Sells Missouri Exchange

S. C. Hoback has sold the Jamestown (Mo.) Telephone Co. to Carl Buerky of Jamestown. Possession was to be given July 1. Hoback had owned and operated the exchange for the past 33 years.

V V

Minnesota Rural Company Sold

Minnesota Railroad & Warehouse Commission on June 23 approved the purchase of Farmers Line #10, Pine River, by Backus Telephone Co.

V V

>> A schoolboy claims that he has solved the problem of how to study and watch television at the same time. He studies during the commercials.

Advantages like these help you

Restore Service Faster!

Only FWD . . . the true 4x4 . . . offers you all these features that speed line work anywhere

Proper Weight Distribution

Only a true 4x4 gives you up to 50% of the weight on the front wheels. This gives you the extra traction needed to speed utility line work.

Full Torque P. T. O. . . . .

Utilizes full engine power through all transmission speeds. Exclusive safety lock prevents truck drive while boring.

High-Climb Oil Sump

Keeps oil pump constantly submerged. An FWD exclusive that lets you bore holes, set poles on steepest grades.

Two-Speed Aux. Transmission

Doubles the number of transmission gear ratios. Provides low gear ratio for full power at extreme low speeds in tough, cross-country operations.

Fully Compensated Drive

Three free-acting differentials compensate for differences in travel of all four wheels. Reduces drive line strains, eliminates needless tire scuffing.

Over 78 Matched Combinations of Trucks and Equipment

Now choose the exact mobilized tool that meets your requirements . . . and deal with *only* one source for complete service and supply.

DESIGNED WITH THE HELP OF VETERAN UTILITY MEN . . . FWD line construction and maintenance units handle your work . . . faster . . . safer . . . and at less cost. These mobilized tools get crews and equipment through to any location in spite of terrain or footing . . . speed work on the job . . . help maintain construction schedules or get service restored in a hurry. See your FWD dealer to get the facts on how FWDs can improve your service and earn more for each equipment dollar. The Four Wheel Drive Auto Co., Clintonville, Wisconsin. *Canadian factory*, Kitchener, Ontario.

Built by the makers of America's Foremost Heavy-Duty Trucks

Telephone *Key Instrument* In Stamping Out Epidemic

By MARY B. AKER

THE HISTORY of community service rendered by the rural telephone companies in this United States can only be half told, according to Mary B. Aker, TELEPHONY's correspondent in Parkville, Mo. A company staff is ready and willing to meet any emergency and catastrophe, as evidenced during the recent anthrax epidemic among cattle which struck a rich farming area in eastern Kansas. At a time like that veterinary doctors were needed badly.

The Wellsville exchange of the WEG Telephone Co., Gardner, Kan., an Independent company near the center of the infected area of Johnson, Douglas, Franklin, and Miami counties, learned the meaning of the word "busy" from both line and operator standpoint in a phase of telephone service unprecedented in its history.

Mr. and Mrs. Ross Gault, owners and operators of the Wellsville exchange, in relating their experiences said their paramount concern was to give every service possible to quell the disease and prevent further spreading. They reasoned that such a catastrophe in any community meant the paralyzing of business and, too, their hearts went out to their customers-in-distress and farmer-friends.

A one-position switchboard normally serves the company's 500 customers, more than 50 per cent of whom are farmers, cattlemen, and dairymen. The board was crowded to more than capacity with calls from the worried herd-owners trying to save their stock from the disease. An extra operator was employed to relieve the pressure on the regular operator.

From early in the morning, when Dr. R. A. Bruce of Ottawa, Kan., and six other veterinarians from adjacent towns started their rounds to visit the infected herds, the switchboard operators at Wellsville were kept informed of their location hour-by-hour. Dr. Bruce would telephone the operator and say, "I can be reached at such-and-such places within the next few hours." And so it went all through the day and far into the night for several weeks.

A farmer only needed to say to the operator when he found sickness in his herd, "I have a cow with fever; find the 'vet' and tell him to come as soon as possible." The operator, always cooperative and thoroughly familiar with the territory, including location of the farm homes and the "vet" at all hours, soon had one of the six on the job by contacting the one nearest the stricken herd.

The same fast and courteous service was extended to farmers without telephones, who either drove into the telephone office to locate the veterinary or

MRS. ROSS GAULT as she appeared at the switchboard during the epidemic.

used their neighbor's telephones. Many times the operator was asked to locate the veterinary where there was no telephone. The nearest neighbors were always cooperative in relaying the message.

Concern over the ravages of the disease in this thriving community also contributed to increased calls. To put it in Mrs. Gault's words, "The farmers just liked to talk to each other and make comparisons, concerning their sick stock, in an effort to alleviate their worry."

The state Board of Health, in order to prevent human consumption of the infected milk, issued strict orders on quarantine and disposal of dead animals, and set up sanitation laws and other measures pertaining to the epidemic.

Mr. and Mrs. Gault recently acquired two additional exchanges — one at Edgerton, Kan., with 250 telephones, and the other at Garden City, Kan., with 500 telephones. Their son is superintendent at the Garden City plant.

When the family was interviewed at the Missouri-Kansas telephone convention in May, they expressed a desire to provide even better equipment and service, including a telephone in every home.

This is another example of how important to the common welfare the rural telephone systems are, particularly when they are operated by devoted public servants.

V V

USITA Committee Conducts Advertising Survey

The Advertising Committee of the United States Independent Telephone Association, under the chairmanship of J. Hartwell Jones, director of advertising and publicity of the Peninsular Telephone Co., Tampa, Fla., is making a survey of advertising and publicity programs of Independent telephone companies.

It is felt that the information secured from the survey will be of assistance to operating companies and it is urged that all companies receiving questionnaires from the committee fill them out and return them promptly to Chairman Jones, P. O. Box 110, Tampa 1, Fla.

V V

Radio-Telephone Communication On Great Lakes O.K.'d in Canada

Canada's Commons approved on June 18 a new U.S.-Canada treaty covering the use of radio-telephone equipment on the Great Lakes.

The agreement, signed earlier this year, will not come into force until two years after it has been ratified by both Canada and the United States. It will run at first for five years.

The treaty authorizes use of radiotelephony as a means of communication of distress signals of ships on the Great Lakes. All Great Lakes shipping of 500 gross tons and over, and all passenger-carrying vessels of over 65 feet in length will be required to install radio-telephone equipment.

V V

"Tyranny comes in the garb of administrative despotism, in which the judgment of the bureaucrat has replaced the economic decisions of the free market."—EVERETT M. DIRKSEN, *U. S Senator from Illinois.*

V V

>> One of our more candid admirals is reported to have said that when the papers pertaining to the building of a battleship equal its deadweight tonnage, the ship is launched.

In quest of the "skeleton of speech"

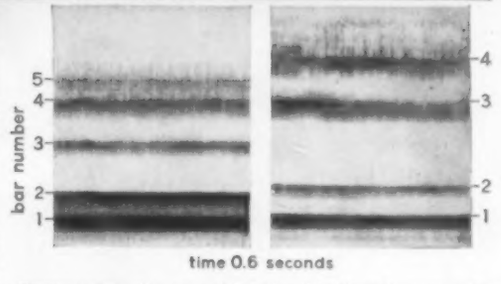
In the famous Quiet Room at Bell Laboratories, this young volunteer records speech for analysis. Scientists seek to isolate the frequencies and intensities which give meaning to words . . . stripping away non-essential parts of word sounds to get the basic "skeleton" of speech.

A child or an adult . . . a man or a woman . . . an American or an Englishman—all speak a certain word. Their voices differ greatly. Yet listeners understand the word at once. What are the common factors in speech which convey this information to the hearer's brain?

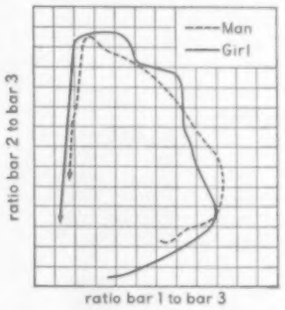
Bell scientists are searching for the key. Once discovered, it could lead to new electrical systems obedient in new ways to the spoken word, saving time and money in telephony.

Chief tool in the research is the sound spectrograph which Bell Telephone Laboratories developed to make speech visible. Many kinds of persons record their voices, each trying to duplicate an electrically produced "model" sound. While their voice patterns are studied, a parallel investigation is made of the way human vocal cords, mouth, nose and throat produce speech.

Thus, scientists at Bell Laboratories dig deeply into the fundamentals of the way people talk, so that tomorrow's telephone system may carry your voice still more efficiently—offering more value, keeping the cost low.



Spectrograms of young girl's voice (right) and man's voice making "uh" sound as in "up." Horizontal bars reveal frequencies in the vocal cavities at which energy is concentrated. The top of the picture is 6000 cycles per second. Pictures show how child's resonance bars are pitched higher than man's.



The word "five." Graph shows ratio of frequency of spectrogram bars. The solid line is for a girl and the dotted line is for a man. Note the similar patterns despite pitch differences. Human hearing extracts the speech sounds from this sort of pattern in the identification of words. Scientists aim at machines that can do the same.

BELL TELEPHONE LABORATORIES

Improving telephone service for America provides careers for creative men in scientific and technical fields.

Proudly We Serve

(Continued from page 18)

may well bring new and greater problems than any we have faced in the past," said Mr. Kahler, "but Illinois Bell people can be counted on to take them in stride."

Mr. Kahler continued: "This company is proud of the reputation its people have earned, not only through their sense of responsibility to the public, but by their demonstration of good citizenship in the communities in which they live and work."

Proudly we serve. We are proud of our industry and its achievements, and the industry is proud of us and the reputation we have established in our work and in our communities.

Having spent the major portion of my years in the traffic department and, having been invited to present a traffic subject, the most interesting, glamorous and fascinating subject is the "operator" who is the very heart of the telephone industry. Her skill, ingenuity and cheerful manner make the use of the telephone a pleasure and satisfaction. I never tire watching the operator's skillful, smooth handling of switchboard cords, keys and other equipment used in establishing and completing local and long distance calls. The operator's technique is the result of hard-working, patient service assistants and chief operators who teach and coach operators in their work.

In the March issue of "The Service Assistant's Bulletin," published by Southern Bell Telephone & Telegraph Co., Henry Grady Turner, assistant vice president, operating department, had this to say about the operators:

"I wonder if you ladies at the switchboard know what a pretty sight you are!

"There you sit at your switchboard answering calls, establishing connections, ringing, disconnecting, overlapping operations and teaming with a rhythm and graceful smoothness that are marks of an expert.

"Good traffic men can quickly tell about the quality of tne service being rendered just by studying the deftness of your hands and taking a good look at your cord handling.

" 'Just look at them work,' a traffic man will murmur. 'There's nothing prettier than a skillful operator doing a good job.'

"This is something that traffic men and women feel; a deep respect for the precision and skill of operators. Traffic people get right poetic about this at times. We compare an operator's skill with her cords and plugs to an artist's skill with his brush. A well-trained operator is beautiful to see. She's proud of her job, of her workmanship. Her supervisors and her customers alike realize that she's a 'winner.' "

It is actually fun to do those things in which one excels. It is smart to acquire skill early and to be able to acquit yourself well in the beginning of your experience as a switchboard operator. Then it is fun to do the work.

It is worthwhile, now and then, to rationalize about one's work—to look at it through rose-colored glasses. You will no doubt find that you have wonderful work with present values, promise, and great factors of personal satisfaction, fun, pleasure and profit.

The pioneers in the telephone industry have served proudly for many years. At a time not too far distant, their places will be taken by the young men and women who are becoming affiliated with the telephone industry today. As pioneers we should make a sincere effort to preserve the history, traditions and ideals of telephony by implanting into the hearts and minds of our younger co-workers the pride of achievement

When You Buy a
BURGESS-MANNING *Acousti-Booth*
You Buy a 50%*
Reduction in Noise

When you invest in a Burgess-Manning Acousti-Booth you are purchasing better communications for your office or plant. Good hearing means fewer errors . . . more work accomplished.

Burgess-Manning booths are pleasing in appearance . . . easy to clean and maintain.

Model 601 Wall Booth of wood construction.

Write for Bulletin A-107

Model 210 Floor Booth of wood construction.

* *Results of studies by a prominent research organization.*

BURGESS-MANNING COMPANY
Architectural Products Division
5970-P Northwest Highway, Chicago 31, Illinois

For Your
ENGINEERS
★ ★
THE ANALYSIS AND PRESENTATION OF ENGINEERING PROBLEMS
(In Two Volumes)
By HARRY C. WALKER, B.S., C.E., Ph.D.
Plant Training Supervisor, Southern Bell Telephone & Telegraph Co.

Volume I is a simple yet comprehensive treatment of the normal thought process applied to engineering problems. This volume also sets forth the principles of logical analysis in the light of emotional bias and other disruptive factors and explains how these may be applied, in writing, to engineering presentations.

Volume II is essentially an English handbook, written particularly for engineers. Using the decimal reference system, this book permits easy and rapid reference in the "language problems" of the engineer.

PRICE: $2.50 PER SET
SEPARATE VOLUMES: $1.50 EACH

ORDER FROM
TELEPHONY PUBLISHING CORP.
608 SOUTH DEARBORN STREET CHICAGO 5, ILL.

Note: We also distribute Dr. Walker's other books:
ORAL EXPRESSION IN SUPERVISION
THE FUNCTIONAL ELEMENT IN SUPERVISION
THE HUMAN ELEMENT IN SUPERVISION
OFF JOB TRAINING

which has been our joy these many years.

I am grateful for the privilege of association with so many fine men and women in the telephone industry during the past 45 years, and for my employment in an industry of which I am very proud. The friendships I have made with people in the industry throughout the nation, and in foreign countries as well, are precious beyond description. I can only express my sentiments in an humble manner by stating:

Life is sweet because of the friends we have made
And the things which in common we've shared;
I want to live on, not because of myself,
But because of the people who care.
It's giving and doing for somebody else,
On that all life's splendor depends.
And the joy of this world
When we've summed it all up.
Is found in the making of friends.

(The foregoing in an address presented by Mrs. Workman before the recently held convention of the Illinois and Wisconsin telephone associations).

Inflation and the Telephone Company

(Continued from page 22)

of commerce in an important terminal of this road formally opposed the rate increases before the ICC (Interstate Commerce Commission). The local railroad men were so indignant as to consider resigning in a body from the chamber, but finally decided against it. A few months later this same city and chamber of commerce decided to give a gala dinner in honor of an important anniversary of the road's first streamline train. Officers and directors of the road and of other companies who had had a hand in the design and manufacture of the train and its engines were invited. Local speaker after speaker stood and eulogized the road for its energy and foresight. At long last the toastmaster called on the president of the road. He got up, said that he was not a speaker but a man of few words. He said, "All I have to say to you tonight is that, if you want to continue to have this kind of equipment, you are going to have to pay for it," and sat down.

Despite the main inflation problem which I have described, I see no reason for becoming discouraged about the outlook for our business. In the first place, I think it is healthy that we recognize the difficulty created by infla-

ALPHADUCT
TELEPHONE WIRE
here's a drop wire that
lasts longer
costs less
ALPHADUCT DUMBBELL PARALLEL
DROP WIRE WITH NEOPRENE JACKET, No. 18 COPPERWELD CONDUCTORS
Now you can have the longest lasting, neatest drops you've ever strung . . . and at less cost too.
Alphaduct's dumbbell or figure eight construction provides the best protection for the conductors, and is the easiest to install of all the neoprene jacketed drop wires. The No. 18 Copperweld is 20% stronger than No. 17 bronze.
Alphaduct's tough neoprene jacket protects the insulation against sunlight, moisture, oil, acids, abrasion, etc. Each conductor has the same thickness of rubber insulation and neoprene jacketing as it does in twisted pair construction. The dumbbell shape permits splitting the wire without damage to insulation or neoprene jacket on either conductor.
Try this remarkable Alphaduct dumbbell drop wire. It's step-tested during manufacture, dated, so you can tell how long it lasts and carton packaged for your convenience and protection. Order today from the distributors listed below.
IT'S DATED • FOR YOUR CONVENIENCE AND PROTECTION
ALPHADUCT WIRE AND CABLE COMPANY
MILLTOWN, NEW JERSEY
NATIONAL DISTRIBUTORS — LEICH SALES CORPORATION — CHICAGO, ILL.
REGIONAL DISTRIBUTORS — LINDSAY SUPPLY COMPANY, CLEVELAND, OHIO
PANCOY SUPPLY COMPANY, CHARLOTTSVILLE, VA

tion, talk about it frankly and work hard to convince the public and the regulatory authorities of its consequences. The matter would be dangerous indeed if it were not recognized by the management, or if we were loath to meet it squarely.

Secondly, I am sure that, if you made a careful review of the progress made by the Bell System companies since the war in obtaining price increases in every state, you would find that considerable success has already been achieved in improving earnings, even though these are not yet satisfactory. The public service commissioner today is a sincere, intelligent and honest public servant, doing his best to be fair both to the public and to telephone investors. I am confident that he will decide this issue wisely and courageously when finally convinced of its importance.

Lastly, I think you can take some comfort in the fact that the business has nearly doubled in size in 10 years and has continued to give more and better telephone service with only very small increases in prices. This has been possible through continuous improvement of plant and equipment by our scientists and engineers, constant improvement in methods and techniques by our operating management, and by the loyalty and devotion to the service of our thousands of telephone men and women who are tops in my book. These are the qualities which have kept your telephone service the best in the world and they are the qualities which, God willing, will keep it that way in the future.

V V

"Foolproof" Message Set-up For 1952 Conventions

Illinois Bell Telephone Co. will use everything from "walkie-talkies" to pretty girls to see that telephone calls and messages get through to persons at the International Amphitheatre in Chicago, site of next month's political conventions.

More than 50 girls will staff a message center and attended public telephones at the Convention Hall, 42nd and Halsted Sts. Their job will be to expedite incoming and outgoing messages for delegates, press, radio and television representatives and visitors.

The message center is the first at any political convention, and will have a special telephone number.

Incoming calls to the center will be referred to the called party on a special blank and placed in a sealed envelope bearing the name of the person called. Delivery by messenger through the sergeant-at-arms will then be made on the convention floor. If the person cannot be located, his name will be posted at the center. A teletypewriter will list names which can be projected on a movie screen at the rear of the center, with a request for people to call for their messages. Duplicates of all undelivered messages will be maintained against loss of calls. General convention notices also will be posted on the screen.

In case of serious emergencies, "walkie-talkies" will supplement the regular efforts to reach a person. A "walkie-talkie" operator will go on a scouting trip to try to reach the person wanted, meantime keeping in constant touch with the telephone center. The message may then be delivered directly.

The telephone girls—now undergoing intensive training—also will be ready to answer almost any question, including where to go, what to see, how to get there, who's manager of the White Sox (or Cubs) and when's the next bus to Oshkosh. The girls will be supervised by two male managers, Donn R. Armstrong and J. R. Baily. A person can find out what the weather is himself — simply by calling, for free, WEather 4-1212, which will be connected directly to the convention building. A huge U. S. map, with five clocks, will give the time for Chicago and the nation's four time zones.

The telephone center, located on the north wing, also will have a map with local transportation routes, telephone directories, special convention directories and 12 attractive circular telephone booths—among 103 booths installed for the conventions. In addition, there will be six standard booths, the telephones of which will work off a key cabinet handled by an attendant. Local and long distance calls can be made here. Nearby will be 30 more standard telephones for local and long distance calls.

The telephone center is expected to be a popular meeting place. There will be comfortable lounges, a television set, (the sound from which will be heard by picking up a special receiver) and ice water.

V V

Mount Vernon (O.) Company Offers Preferred Stock

Mount Vernon (O.) Telephone Corp. recently made its first offer of 2,000 shares of additional 5 per cent cumulative preferred stock, intended to raise some $200,000 of new capital to help finance the company's modernization and expansion program.

The stock is being offered first to present holders of the company's preferred stock who are Ohio residents, at a price of $100 a share and on a

Constructio at
With the Doub ar
and Americ ad
the new cane se
is cooler - cleane
more comfortable

sturgis SC-24
Literally "by request"—this new op
tor's chair retains all the posture ad
tages for which Sturgis is famed and a
the cool, clean comfort of a cane
The posture-curved, well-cushioned b
rest is covered in genuine leather.
The exclusive Sturgis "Follow-Flex"
ture automatically adjusts to the op
tor's every movement, supports her
fully all the time, discourages fati
keeps her at top efficiency.
Other new and welcome features incl
a plastic-coated steel foot ring which
tains its color and a handy purse hol
available on request. Six seat heights
adjustable.
STROMBERG Telephone CARLSON
TELEPHONES SWITCHBOARDS

aterials and Supplies . . .

arantee of Stromberg-Carlson
ading Manufacturers . . .

RAYTHEON RectiChargeR*

maintains constant voltage output over the complete load range!

Maintains the close voltage limits required by telephone systems and reduces such common difficulties as incorrect ringing, line noises and lamp failures. The constant potential method of charging prevents battery gassing and water loss. A smaller maintenance crew can handle a greater number of installations.

A small storage battery floated across the terminals of a Raytheon RectiChargeR for emergency and peak period use is kept at constant cell voltage so that it never becomes overcharged or undercharged . . . thus prolonging the life of the battery.

The frequent use of the Raytheon RectiChargeR in unattended exchanges is ample proof of its dependability. Available from 1.0 to 100.0 amperes with either 24 or 48 volt output.

*Reg. U.S. Pat. Off.

cook type RO

outdoor sub-station protector

A very rugged Protector, assembled on a bracket of heavy steel—instead of porcelain—to take rough handling and subscriber abuse without danger of breakage. Other outstanding features:

1. Uses a Cook Standard Type H Protector unit with molded bakelite base for high resistance to electrical and physical shocks.
2. Protector unit contains both primary and secondary arresters. The secondary arrester provides a path to ground for lightning should the fuses be blown.
3. Mountings contain heavy studs for connecting drop wires and ground.
4. Equipped with heavy zinc weatherproof hood, and bracket for mounting on post, wall, etc.
5. All structural parts, including hood and bracket, are grounded.

for rural lines with fog, rain, humidity—

hemingray insulators

(Left): Hemingray "No. 9." Made from only 9 oz. of glass, but with a maximum leakage path approaching standard long-distance design. Inner skirt surface well protected from rain-splash; long skirt protects pin itself.

(Right): Hemingray "No. 14." Its double-petticoat feature is useful wherever fog and humidity prevail. Production economy in design and lightness make its low cost attractive for rural telephone line budgets.

Manufactured by American Structural Products Company

Distributed by
STROMBERG-CARLSON
ROCHESTER 3, NEW YORK

EQUIPMENT AND ELECTRONIC CARILLONS • INDUSTRIAL INTERCOMMUNICATION SYSTEMS • TELEVISION, RADIOS AND RADIO-PHONOGRAPH

Commercial TELEPHONE Cord

★ PROMPT DELIVERY

★ ECONOMY • QUALITY • SERVICE

★ LONG LIFE • NOISE FREE CONDUCTIVITY

COMMERCIAL CORD and SUPPLY CO., INC.
26 East Main Street • CLIFTON SPRINGS, N. Y. • Phone Clifton Springs 189

MANUFACTURERS OF CORDS FOR ALL MAKES AND TYPES OF TELEPHONE INSTRUMENTS

Write for Catalog and Samples

'32 P & H PENTA

PENTA POLES

FULL LENGTH TREATED NORTHERN WHITE CEDAR

They are light in weight—easier to transport and set; they are clean and dry—easy to climb—safe for linemen. They are pleasing in color—neat in appearance.

PAGE AND HILL, INC.
MINNEAPOLIS, MINN. • 50 CHURCH ST., NEW YORK 7, N. Y.

basis of one share for each two shares of stock now held. Shares not subscribed by June 15 were to be offered to others at the same price, the company said.

The new stock is redeemable at the option of the company at $105 a share plus accrued and unpaid dividends.

V V

C. E. Johnston, Active in Northwest, Dies

Clarence E. Johnston, 60, former president and chairman of the board of General Telephone Co. of the Northwest, Spokane, Wash. (formerly Interstate Telephone Co.), died on June 23 in Spokane following a brief illness. Mr. Johnston had long been active in the Independent telephone industry.

He was born in Troy, Idaho, on Aug. 12, 1891. He attended grade school in Troy, high school in Moscow, Idaho, and the University of Idaho. While still attending school he became a night operator with Interstate Telephone Co., Ltd., at Moscow, Idaho. During vacations he had various jobs with Pacific Telephone & Telegraph Co.

In 1912 he worked for Alberta Government Telephone System, resigned to attend Automatic Electric Co. training course and later returned to the Alberta system.

In 1917 he was employed by Moscow Telephone Co. as a wire chief. Later he moved to Davenport, Wash., and became manager of Davenport Independent Telephone Co.

He returned to Moscow Telephone Co., which was purchased by Interstate Utilities Co. and was associated with the latter company until 1930. At that time the Interstate Utilities Co. became affiliated with the Associated Telephone Utilities Co., now known as General Telephone Corp., and Mr. Johnston was transferred to the State Telephone Co., Lubbock, Tex. Then, in 1931, he was transferred to the Associated Telephone Co., Ltd., Santa Monica, Cal.

He returned to the Interstate Telephone Co. at Spokane in 1936 as vice president and general manager, which position he held until 1941 when he was elected president of the company. Because of ill health, he resigned from the presidency in March, 1950, but remained with the company as chairman of the board of directors. Due to continued ill health, his resignation as a director and chairman of the board became effective Oct. 29, 1951.

At the time of his death he was associated with the company in the capacity of consultant to the president. For the last four years he had been residing at Hayden Lake, Idaho.

Mr. Johnston was a member of the Independent Telephone Pioneer Association and a charter member of the Northwest chapter. For many years he was active as a director in the Washington Independent Telephone Association.

He is survived by his widow, Elizabeth, at Hayden Lake; three daughters, Mrs. Ellen Morken of Sacramento, Cal.; Mrs. Faith Boulac and Miss Jessie Johnston of Spokane; and five grandchildren.

In the Nation's Capital

(Continued from page 14)

Historically our government of the United States, like other governments, has grown from the performance of very few and simple duties, and with correspondingly low taxes, to the performance of very many duties and very high taxes. Here is a very rough timetable of the growth of state responsibility:

1789 Military and civil security (with the adoption of the Constitution).
1790 Street lighting and maintenance in larger cities.
1800 "Free" roads and highway maintenance.
1807 Municipal police protection.
1812 "Free" schools (elementary).
1825 Organized postal service at cost.
1830 "Free" fire protection.
1870 Schools (secondary).
1878 Vocational training.
1890 Municipal water service at cost (not general).
1895 Army engineers improve navigation and control floods.
1900 Parks and recreational facilities.
1905 Reclamation service at cost.
1910 State colleges (partially subsidized).
1918 First minimum wage-maximum hour law.
1920 Federal aid for highways.
1931 Early federal aid for agriculture.
1933 Social security, old age pensions, and unemployment insurance.

This is as far as we have gone to date. Many of these earlier ventures became expanded greatly in later years, such as the many aids to agriculture and present labor laws. The following is a suggested timetable of the welfare state which has largely been enacted in socialistic countries abroad:

Socialized health benefits hospitals.
Socialized electricity (subsidized).
Other utility services, including communications.
Vocational direction (labor control).
Cultural directions (thought control).
General commodity rationing.
Queue lines for everybody.

FITS EVERY LINEMAN!

NEW
Buckingham
Adjustable Climbers

Now—one pair of climbers that fits tall men, short men—all men on the crew! One pair of climbers that accommodates the various thicknesses of footgear and clothing worn in different seasons!

New Buckingham Adjustable Climbers are quickly and easily adjusted from size 15″ to size 18″ by means of an oval head set screw and lock washer, assuring exact fit. If desired, leg irons can still be bent to follow the shape of the wearer's leg.

These advanced-design climbers permit utilities to carry a smaller stock of climbers. They are eminently practical as extra climbers. And—because they will fit any worker—they're ideal for sub-station, plant or service truck.

Famous Buckingham Quality, Safety, Comfort

Buckingham Adjustable Climbers can readily be fitted with leg and foot straps, and deluxe leather pads filled with rubberized wool for greater comfort. Gaffs are permanently attached to the leg irons, pitched at an angle which permits closer standing to the work—less chance of cut-out—easier climbing.

Standardize on Buckingham Adjustables. Fewer pairs are needed to keep every man working.

Ask about them at your supply house — or write for further information.

BUCKINGHAM MANUFACTURING CO., INC.
31-33 TRAVIS AVENUE BINGHAMTON, N. Y.

Uniform (low) wages for everybody.

Security measures to protect the welfare state (censorship, suppression of political opposition).

Restriction on travel without permission.

Thus is perfect equality for everybody finally accomplished. And, thus, we see how modern government has tended to grow from its early simple duties of providing army, navy, and police protection to the socialist standard of providing paternalistic benefits to the greatest detail. The trouble comes when the "pay-as-you-go" basis of local responsibility is abandoned in favor of centralized federal aid. Centralized aid always brings centralized federal control.

Inevitably centralized federal control means government monopoly, and suppression of all opposition, including political opposition. These trends have been the subject of almost tiresome repetition in the history of other countries. But a good many people in America cannot see that we are on the same road and that the end result is anything but liberal and "free." The final goal suggests all the "security" of an open-air penitentiary.

Public utilities provide a good place to make a stand because they are services which cost the individual little in comparison with the benefits received. Yet, they could easily be abused by excessive use, which would be the case if the people did not have to pay anything at all, or very little on a political subsidized basis. *In other words, keeping the government out of the utility business means holding the line between a solvent and benevolent democracy and a welfare state which has to exploit its own citizens by force and restrictions to keep operating at all.* Any nation is safe from socialist abuse as long as its utilities are not in the hands of the state.

As a postscript to the above commentary, it is interesting to note that Britain will soon have commercial television to supplement the advertising free programs of the government-owned British Broadcasting Corp. An announcement last week said the first commercial company will be formed when the government gives the final go ahead. These commercial television programs will eventually be allowed to compete with the tax-subsidized British Broadcasting Corp.

V V

Pritchard and Schuman Named by Stromberg

Charles W. Pritchard and Daniel G. Schuman recently were elected assistant treasurers of Stromberg-Carlson Co., Rochester, N. Y., at a regular meeting of the company's board of directors.

Pritchard has been with Stromberg-Carlson continually since 1937, when he joined the company's credit department. He was made credit manager in 1941, a position he still holds as well as that of treasurer of the Stromberg-Carlson Credit Corp., a wholly owned subsidiary designed to provide financing for small Independent telephone companies. He also has charge of relationships with government agencies and suppliers of materials under priority regulations. These various responsibilities will be continued under his new title.

Pritchard went to Stromberg-Carlson from Neisner Brothers of Rochester where he was engaged in the same field of work. Prior to that he had been with Bausch & Lomb and the Genesee Valley Trust Co., both of Rochester.

Schuman was formerly employed by Price Waterhouse & Co., New York City, as a manager in the systems department of that firm. For the past three years he has been reorganizing methods and procedures for Stromberg-Carlson and in his new position as assistant treasurer will have charge of the methods and procedures department.

Schuman was a lieutenant-commander in the Bureau of Ships of the U.S. Navy from 1942-1945. He was stationed at the Naval Shipyard, Long Beach, Cal., and received a Commendation Ribbon from the Secretary of the Navy for his services there. He is a member of the National Association of Cost Accountants.

Born in New York City, Schuman attended public schools in California, is a graduate in engineering from California Institute of Technology, and holds a master's degree in industrial management from the Harvard Graduate School of Business Administration.

V V

IT&T Names Directors, Subsidiary a Vice President

At the recent annual stockholders meeting of the International Telephone & Telegraph Corp., James H. Kellogg, president of Kellogg Switchboard & Supply Co.; Henry H. Scudder and Albert U. Pinkney, vice presidents of International Standard Electric Corp.; and Paul F. Swantee, comptroller of ISE, were elected directors.

Patrick J. McGann also was elected vice president of International Standard Electric, overseas manufacturing and export subsidiary of IT&T, at a recent meeting of ISE's board of directors, IT&T announces.

McGann joined the International Western Electric Co., predecessor of ISE, in 1920 and has been engaged in the promotion of exports of telecommunication equipment throughout the world since that date. He has been responsible for contracts covering a number of substantial telephone, telegraph, and radio projects in many countries of the world. As export sales manager of ISE since 1943, he has successfully directed negotiations in connection with the modernization and improvement of telecommunication and airport facilities in many countries, particularly in Central and South America.

Federal DIAL SWITCHING SYSTEMS
will meet your conversion requirements
FEDERAL TELEPHONE AND RADIO CORPORATION
An IT&T Associate Clifton, N. J.

W. C. Hopper Joins Kellogg On Switchboard Sales

F. M. Parsons, sales manager of Kellogg Switchboard & Supply Co., Chicago, has announced the appointment of W. C. Hopper as REA switchboard sales supervisor and assistant manager of the switchboard sales department.

W. C. HOPPER

Hopper began his career with the Bell System, gaining 15 years' experience in sales and commercial activities before joining Western Electric Co. He served in the Signal Corps during World War II.

From 1945 to 1950 Hopper was active as sales engineer in dial conversions for North Electric Mfg. Co., Galion, O.

Prior to joining Kellogg, Hopper was in the application and loan division of REA in charge of telephone loan activities for the southeastern states. Hopper will assist A. O. Perry, switchboard manager.

V V

Chief Executive J. A. Code Of Gary Group Retires

Announcement has been made by F. S. Spring, president of Theodore Gary & Co. and of its two principal subsidiaries, that Maj. Gen. James A. Code Jr. is relinquishing his position as chief executive of the Gary Group, effective June 30.

General Code joined the Gary Group in January, 1946, shortly after retirement from his position as assistant chief signal officer of the U. S. Army. In the seven years since that time, he has taken a leading part in the executive direction of the various Gary Group companies, which include telephone operating organizations in the United States and abroad, and companies of the manufacturing division, of which Automatic Electric Co., Chicago, is the principal unit.

General Code has announced that he is returning with Mrs. Code to his home in Palo Alto, Cal., where the majority of the family still resides.

'As Close As Our Telephone'

Following a recent flood around Chinook, Mont., Chinook Telephone Co. was praised in the local newspaper for its continued service. The report stated:

"Among our Dear Hearts and Gentle People is the Telephone Company. Mr. McPherson (Ed McPherson Jr., manager of the company) came out by boat during the flood and repaired a place in the valley line which was cutting off 10 families from telephone service. We don't know what we would have done without those telephones. It was, in many cases, our only source of contact with people along the river.

"We give our telephone service credit for the fact that no lives were lost during the Milk River valley flood. Even our good friend and county commissioner, Johnny Stevens, called several times and inquired as to our safety and conditions in general. Our telephone rang 50 times every day, if not more, as friends from all over the entire valley as well as Chinook called to offer help if we needed it.

"We were surrounded by water, but unafraid, because help was as close as our telephone."

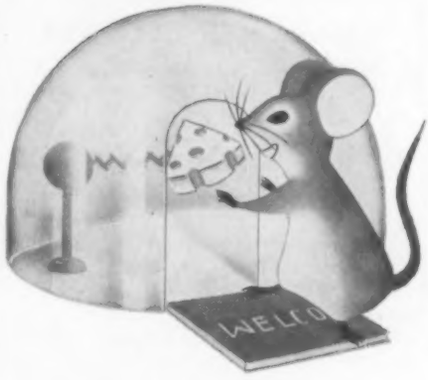
"Who's going to bail out America if we follow Britain down the economic skid row of Socialism?"—D. A. Hulcy, *President, Lone Star Gas Company.*

Telephone outside plant construction of all types.
MULLEN ELECTRIC COMPANY
2002 E. Wisconsin Avenue
Appleton, Wisconsin

CYRUS G. HILL
ENGINEERS
PLANT — TRAFFIC — COMMERCIAL
VALUATIONS AND ORIGINAL COST
231 S. LA SALLE ST., CHICAGO 4

SLOAN, COOK & LOWE
CONSULTING ENGINEERS
120 SOUTH LA SALLE STREET
CHICAGO
Appraisals—Original Cost Studies
Depreciation, Financial, and Other
Investigations

We've Built a Better Mousetrap



FLOTROL
THE BATTERY CHARGER WITH NO MOVING PARTS *

Model 12008

And telephone men are beating a path to our door.

They've found that FLOTROL does what they always hoped their battery charger really would do; IT HOLDS CONSTANT FLOATING VOLTAGE on the battery.

They've found, too, what it can mean to have a charger which doesn't require attention, one they can depend on to do its job, year in and year out, without costly and annoying routine maintenance or adjustment.

For complete information, write for Bulletin 160, which describes the single-phase models, from 1/2 ampere to 24 amperes, and Bulletin 161 which covers three-phase models from 25 amperes to 200 amperes.

* *No good on mice.*

LORAIN PRODUCTS CORPORATION
1122 F STREET LORAIN, OHIO
FLOTROL SUB-CYCLE

CLASSIFIED SECTION

Rates 15 cents per word payable in advance. Minimum charge $3.00 for 20 words or less. Classified advertisements must reach us 8 days before publication date.

FOR SALE

IMMEDIATE DELIVERY

12-85 H.T.L. Amertel Galvanized Line Wire

Up to 1500 lbs. Per 100 lbs.....$12.90
1500 to 3999 lbs. Per 100 lbs..... 12.55
4000 to 9999 lbs. Per 100 lbs..... 12.35

Amertel Galvanized Steel Strand

Per 1000 ft.

1/4" Siemens Martin Grade.....$26.93
5/16" Siemens Martin Grade..... 36.81

In 250 ft. Coils

★★★ **VERY SPECIAL** ★★★

Buckingham Linemen's Belts — complete with straps and pads.

Sizes 15" to 17½". Complete, pr. $7.75

F.O.B. CHICAGO

TELEPHONE REPAIR AND SUPPLY CO.

1760 LUNT AVE. CHICAGO 26, ILL.

TELEPHONE PROPERTY OF OVER 700 PHONES LOCATED IN CENTRAL IOWA. Kellogg Masterbuilt 2-position common battery switchboard, installed in 1949. Plant all metallic. Town telephones one and two-party only, with Kellogg 1000 Series handsets, Koiled Kords and automatic ring. Willing to sell at a fair price but will not sacrifice. Will be glad to answer any bona-fide inquiries, but if just curious do not write. Reason for selling: other interests. Write Box No. 3217, c/o TELEPHONY.

FOR SALE

A. E. #34-A MONOPHONES (Self-contained). Reconditioned. Common Battery Service $13.00 each. Dial Service (A.E. Type #24 Dials) $17.50 each. FOB Columbus, Ohio. Buckeye Telephone & Supply Co., 1250 Kinnear Rd., Columbus, Ohio.

NEW DIAL SWITCHBOARD. Kellogg Broadspan Relaymatic 200 line, has never been installed. 120 line wired, 12 links with coded ringing. Available for immediate delivery. Write or call Gardonville Co-op Telephone Association, Brandon, Minn.

DIAL SWITCHBOARD: Kellogg Relaymatic—100 lines, 10 links complete with power board, rectifiers, batteries and main frame. Nine years old. Immediate delivery. Write Pattersonville Telephone Co., Rotterdam Junction, N. Y.

STELLA TELEPHONE COMPANY. Write Victor L. Rhine, Stella, Mo.

CONTROLLING INTEREST IN TELEPHONE COMMON BATTERY PLANT near San Antonio, Tex. in good condition. Grossed $61,000. Do not telephone. Write Box No. 3221, c/o TELEPHONY.

GUARANTEED RENEWED EQUIPMENT

W.E. #202 handsets—F-1 handle, new cords.$6.50
706 Rec. HA-1 unit in slip type shell..... 1.50
W.E. #635 Trans.—F-1 unit in plastic front. 1.65
HA-1 Capsule rec. unit only..... .75
F-1 Capsule receiver unit only—rebuilt..... 1.00
Complete line of Telephone supplies, completely rebuilt and guaranteed. Write your needs.

REBUILT ELECTRIC EQUIPMENT CO.
1704 W. 21st Place Chicago 8, Illinois

IN STOCK

**New Type Field Wire, D-1-A, tw. pr., 3 steel 4 copper strands per cond., plastic, nylon, lacquered finish ins., latest army type tel. wire @ $5.00/M ft.

**#18/2, tw. pr., DROP WIRE—Ironite type, mfd. by Paragon, WP braided, full coils, new materials, recent mfr., $16.00/M ft.; FOB destination, USA (Qty. Discts.)

**#14/2, tw. pr., copper cond., solid, rubber ins., WP braided outside wire. New material, 500 ft. coils in cartons, $35.00/M ft.; FOB destination. (Qty. discts.)

**Magneto Ringer Boxes: All Makes
3 bar—1000 ohm..$6.50 each
5 bar—1600 ohm..$8.50 each
5 bar—2500 ohm..$8.50 each

**W.E. #202, desk handset telephone, for use with separate bell box; can be used for magneto or C.B. .....$10.00 each

**A.E. type 1-A, similar to W.E. #202 .....$8.50 each

**Federal Telephone, #802-A, latest type, self-contained desk phone equal to W.E. #302.... .....$14.50 each dial blanked

**A.E. type #34A3, desk handset telephone, self-contained desk phone with harmonic ringer (cycles 16.6, 33.3, 50, 66.6), complete, dial blanked..... .....$12.50 each
w/A.E. #24 dial..$16.50 each

Terms: Net; FOB New York (except those showing FOB destination).

All Material in Excellent Condition and Fully Guaranteed.

TELE-WIRE SUPPLY CO., INC.

Distributors of Telephone Supplies

136 Maiden Lane, New York 38, N. Y.
HAnover 2-9690

WANTED TO BUY

Old, established, nationally known company interested in the purchase of Patents, New Products or Companies that have an application in the telephone field.

CONTACT
BOX NO. 3013, c/o TELEPHONY

Reconditioned

MODEL 30-C CALCULAGRAPHS ELECTRIC TYPE

Model 30 operates on 20 volt, 60 cycle AC current but is equipped with transformer to operate on any 110 volt, 60 cycle circuit. Write for further details and price.

●

BUCKEYE TELEPHONE & SUPPLY CO.

1250 KINNEAR ROAD COLUMBUS 8, OHIO

Kingswood 0655

ATLANTIC
Creosoting Co., Inc., 17 Battery Pl., N. Y. C.
Creosoted Pine Poles
Crossarms . . Conduit
PLANTS AND OFFICES
New Orleans, La. Jackson, Tenn. Boston, Mass.
Winnfield, La. Louisville, Miss. New York, N. Y.
Norfolk, Va. Savannah, Ga. Philadelphia, Pa.
Annapolis, Md. Chicago, Ill.

POLES
CREOSOTED SOUTHERN YELLOW PINE
LOW RESIDUE COAL TAR DISTILLATE
"Truck Delivery Our Specialty"
THE BAKER WOOD PRESERVING COMPANY
P.O. BOX 355 MARION, OHIO

POLES

B. J. Carney & Co., 100 N. 7th St., Minneapolis, Minn.—Western red cedar poles. Pentrex Butt Treated or Plain.

Cascade Pole Co., P.O. Box 743, Tacoma, Wash. — Creosoted Douglas Fir and Cedar Poles.

C. M. Christiansen Co., Phelps, Wis.—Northern White Cedar Poles, plain or butt treated.

Dierks Lumber & Coal Company, Creosoting Division, 700 Dierks Bldg., Kansas City, Mo.—Pressure creosoted yellow pine poles at our modern plant at Process City, Ark., near DeQueen.

Eppinger & Russell Co., 80—8th Avenue, New York 11, N. Y.—Creosoted Poles and Cross Arms. Plants: Jacksonville, Fla., Norfolk, Va., Eddington, Pa.

International Creosoting and Construction Co., Galveston, Texas.—Creosoted Southern Yellow Pine Poles. Plants Beaumont and Texarkana, Texas.

Montana Pole & Treating Plant, Butte, Montana. — Fir Lodgepole Pine Poles. Butt-treated or Full-length treated with Creosote or Penta.

T. M. Partridge Lumber Co., Minneapolis, Minn.—Northern White—Western Red Cedar Poles, Plain or butt-treated.

NORTHERN WHITE CEDAR
Lodge Pole Pine
Coast Douglas Fir
Western Red Cedar

Plants and Yards:
MINNEAPOLIS, MINN. • SPOKANE, WASH.
NATIONAL POLE and TREATING DIVISION
MINNESOTA AND ONTARIO PAPER COMPANY
Minneapolis 2, Minnesota
Branch Offices:
CHICAGO • SPOKANE

HELP WANTED

Manufacturing company needs salesman in its supply division. Preferably young man with telephone plant or manufacturing experience. Free to travel. Write Box No. 3212, c/o TELEPHONY.

NEALE CONSTRUCTION COMPANY, INC.
TOPEKA, KANSAS
Journeyman Telephone Linemen and Line Foremen all needed to travel middle west constructing telephone lines and plants. Permanent, steady positions. Good salary.

COMBINATIONMAN — permanent position, good wages, numerous employee benefits. Employment also affords opportunity for advancement. Replies are strictly confidential and should include details of experience and objectives. Write Union Telephone Co., Owosso, Mich.

CABLE SPLICERS, Station Installers, Linemen. Experienced men needed. Steady work, good pay. Henkels & McCoy, 6100 N. 20th, Philadelphia, Pa.

SALESMAN TO COVER MISSOURI AND KANSAS for telephone supply house on commission basis. Car furnished. Write Box No. 3190, c/o TELEPHONY.

LINEMEN AND APPRENTICES. Good pay. Permanent. Good future with new organization. Write for application blank and full details to Box 247, Station F, Buffalo 12, N. Y.

POSITION WANTED

MAN WITH 20 YEARS' EXPERIENCE IN TELEPHONE WORK would like a job as manager, combinationman or station installer. Write Box No. 3219, c/o TELEPHONY.

ACCOUNTANT — Class A experience. Good references. Seek to relocate in Southwest. Experienced in operating and statistical reports and as plant accountant. Write Box No. 3218, c/o TELEPHONY.

OPERATOR WITH 10 YEARS' EXPERIENCE in plant maintenance, construction, management, supervision and business administration. Available immediately. Write Box No. 3216, c/o TELEPHONY.

AS MANAGER OR PLANT SUPERINTENDENT. Qualified by specialized training and 21 years' field experience; inside and outside, dial or manual. Must be permanent. Expect salary in line with qualifications. Now employed, but can be available in 30 days. Write Box No. 3220, c/o TELEPHONY.

Cedar Poles
THE MAC GILLIS & GIBBS CO.
1615 E. Royall Place, Milwaukee 2, Wis.
Northern White and Western Red Cedar
Creosote and Pentachlorophenol Treatments

INSPECTION SERVICE
Of poles, crossarms, and preservative treatments. Analyses of wood preservatives. Inspectors stationed throughout U.S.A.
A. W. WILLIAMS INSPECTION CO.
MOBILE, ALA.

TELEPHONE CONSTRUCTION, INC.
BOX 267
JEFFERSON, IOWA
Consulting, Engineering, Installation of Telephone Equipment, Cable Splicing, Aerial, Under-ground construction, Central Office Equipment a Specialty.

Cable Splicing—Repairing—Cable Plant Construction—Aerial Spinning and Underground Trenching—Line Construction—Switchboard Repairing . . . ALL WORK GUARANTEED
WILTON ELECTRIC & TELEPHONE CONSTRUCTION CO.
ANDY MUELLER
Wilton Jct., Iowa Telephone 21

Installation Specialists
CENTRAL OFFICES
INSTALLED—MODIFIED—ENLARGED
COMMUNI-CATERING
P.O. BOX 6712 CHICAGO 7, ILL.

STATION INSTALLERS
Cable Splicers Construction Crews
Experienced Crews for Any Size Job
HENKELS & McCOY
6100 N. 20th St., Philadelphia 38, Pa.
Now Operating in 14 States

TELEPHONE ENGINEERING CORPORATION
DALLAS, TEXAS
2210 Butler Street
P.O. Box 6633 Tel. LAkeside 5245
Consultants and specialists in telephone systems design from outside plant to Central offices — Micro wave — R.E.A. design and procedures.

TELEPHONE PRINTING
By People Who Know the Telephone Business
SEE THE SUTTLE CATALOG
SUTTLE EQUIPMENT CO.
LAWRENCEVILLE ILLINOIS

SPECIALISTS Our 46th Year
TELEPHONE FORMS
PRINTING • PLANOGRAPHING
YOUR ORDERS RECEIVE PROMPT ATTENTION
CULLOM & GHERTNER CO.
800 21st AVE., N. NASHVILLE 4, TENN.

How to Build Better Rural Lines at Lower Cost per Mile

Write for Your Copy of This Free Book!

You can save material and man-hours, and build better rural lines, when you use *Crapo* High-Tensile Telephone Line Wire.

Long-span, lower-cost rural construction is described in the illustrated Manual shown above. Designed to assist telephone men in furthering their plans to extend and improve rural service, this book includes stringing sag and tension data, helpful information on construction practices, metalicizing, transposition, pole guying, and related subjects.

This FREE book is yours for the asking. Write for Manual No. 203 today!

Crapo HIGH-TENSILE LOW-RESISTANCE LINE WIRE

Crapo HTL-85

Crapo HTL-135

Distributed by Leading Jobbers

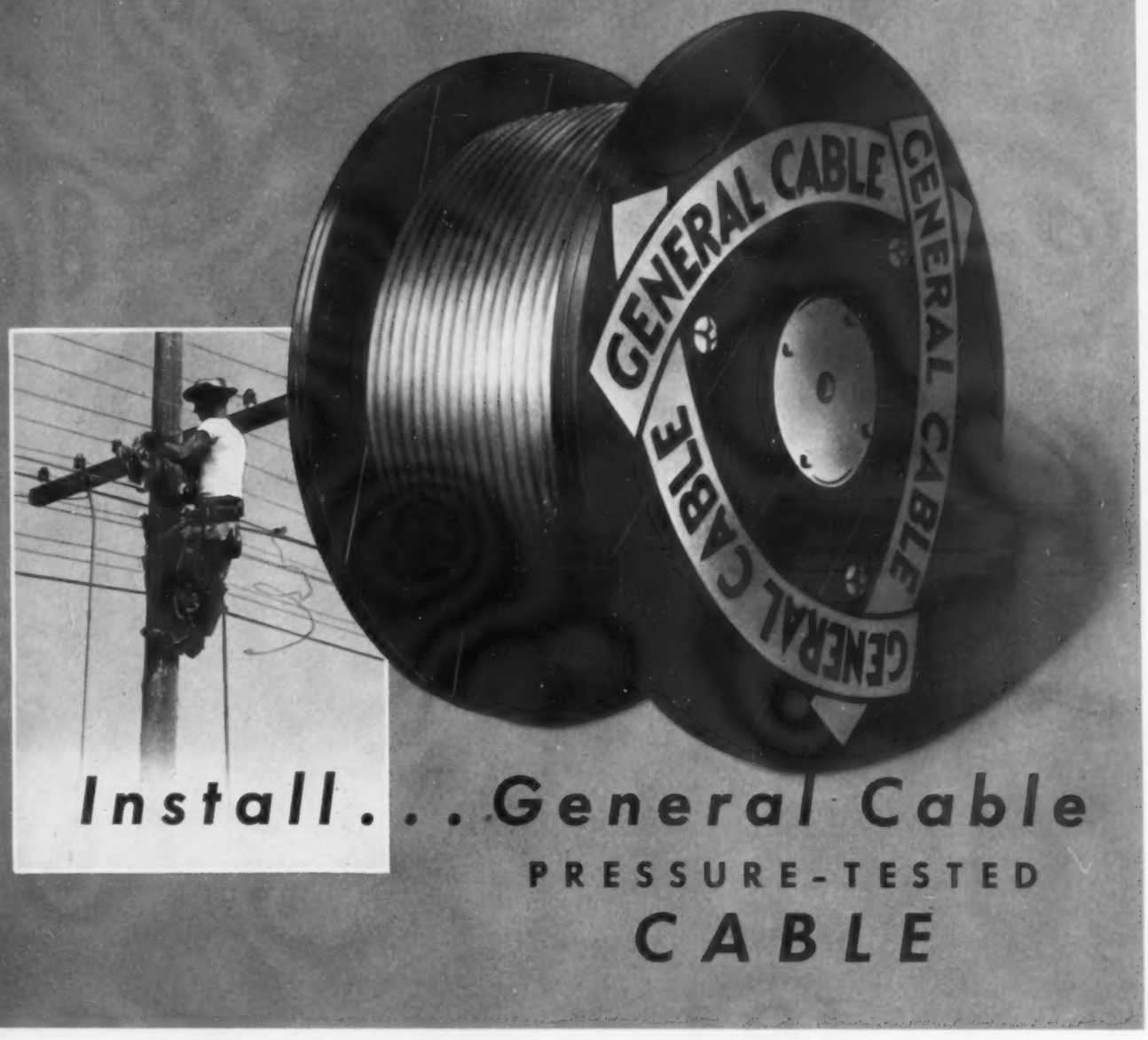
●

INDIANA STEEL & WIRE COMPANY
Muncie, Indiana

Index to ADVERTISERS

	Page
Acorn Insulated Wire Co., The	—
Alphaduct Wire and Cable Co.	37
American Appraisal Co., The	—
American Creosote Works, Inc.	—
American Creosoting Co.	—
American Steel & Wire Co.	—
American Structural Products Co.	—
American Telephone & Telegraph Co.	—
Ansonia Electrical Co., The	—
Armstrong Cork Co., Glass Insulator	—
Atlantic Creosoting Co., Inc.	45
Automatic Electric (Canada) Ltd.	—
Automatic Electric Sales Corp.	24-25, 47
Baker Wood Preserving Co., The	45
Barco Mfg. Co.	—
Barrett Division, The Allied Chemical & Dye Corp.	—
Bell Telephone Laboratories	35
Berry & Co., L. M.	—
Brach Mfg. Corp.	—
British Insulated Callender's Cables, Ltd.	29
Buckeye Telephone & Supply Co.	44
Buckingham Mfg. Co., Inc.	41
Burgess-Manning Co.	36
Burroughs Adding Machine Co.	—
C & D Batteries, Inc.	12
Cable Spinning Equipment Co.	—
Calculagraph Company	—
Carney & Co., B. J.	45
Cascade Pole Co.	45
Chance Co., A. B.	—
Chase Brass & Copper Co.	—
Christiansen Co., C. M.	45
Coffing Hoist Co.	—
Commerce Service Corp.	—
Commercial Cord & Supply Co., Inc.	40
Communi-Catering	45
Continental Cross Arm Co., Inc.	—
Cook Electric Co.	—
Copperweld Steel Co.	—
Cornell-Dubilier Electric Corp.	—
C-O-Two Fire Equipment Co.	—
Crown Telephone Protector Co.	—
Cullom & Ghertner Co.	45
Dierks Lumber & Coal Co.	45
Dillon & Co., W. C.	—
Donnelley & Sons, R. R.	—
Dow Chemical Co., The	9
Eagle Mfg. Co.	—
Ederer, Inc.	—
Electric Products Co., The	—
Electric Storage Battery Co., The	—
Eppinger & Russell Co.	45
Ericsson Telephone Sales Corp.	—
Everstick Anchor Co.	—
Federal Telephone & Radio Corp.	42
Four Wheel Drive Auto Co.	33
General Electric Co.	—
General Insulated Wire Works, Inc.	—
General Scientific Equipment Co.	—
General Telephone Directory Co.	—
Gladwin Plastics, Inc.	—
Gould-National Batteries, Inc.	—
Graybar Electric Co.	27
Greenlee Tool Co.	—
Haley & Co., R. G.	—
Hallicrafters Co., The	—
Henkels & McCoy	45
Highway Trailer Co.	—
Hill, Cyrus G.	43
Gustav Hirsch Organization, Inc.	—
Holan Corp., J. H.	—
Homelite Corp.	31
Hubbard & Co.	—
Idaho Pole Co.	—
Indiana Steel & Wire Co.	46
Inland Steel Co.	—
Insto-Gas Corp.	—
International Business Machines	—
International Creosoting & Construction Co.	45
International Harvester Co.	—
International Standard Electric Corp.	—
John Bean Mfg. Co.	—
Johns-Manville	—
Joslyn Mfg. & Supply Co.	—
Kearney Corp., Jas. R.	—
Kellogg Switchboard & Supply Co.	4-7
Kennecott Wire & Cable Co.	—
Kester Solder Co.	—
King, W. T.	—
Klein & Sons, Mathias	—
Koiled Kords, Inc.	—
Koppers Co., Inc.	—
Leeds & Northrup Co.	—
Leich Sales Corporation	10-11
Lindsay Telephone Supply Co., The	—
Line Equipment Sales	—
Line Material Co.	—
Linen Thread Co., The	—
Loomis Advertising Co.	—
Lorain Products Corporation, The	41
Lowell Insulated Wire, Div. of the Overlakes Corp.	—
MacGillis & Gibbs Co.	45
Mahood, Edwin T.	—
Mall Tool Co.	—
McCabe-Powers Auto Body Co.	—
Montana Pole & Treating Plant	45
Moran, John J.	—
Mullen Electric Co.	43
Mutual Liquid Gas Equipment Co.	—
National Carbon Div.—Union Carbide & Carbon Corp.	—
National Fireproofing Co.	—
National Pole & Treating Div. Minnesota & Ontario Paper Co.	45
National Telephone Supply Co.	Back Cover
Neale Construction Co.	—
North Bros., Mfg. Co.	—
North Electric Mfg. Co.	28
Onan & Sons, D. W.	—
Osmose Wood Preserving Co. of America, Inc.	—
Page & Hill, Inc.	40
Paragon Electric Co.	—
Partridge Lumber Co., T. M.	45
Philco Corporation	—
Porcelain Products, Inc.	—
Porter, Inc., H. K.	—
Power Equipment Co.	—
Ray-O-Vac Co.	—
Raytheon Mfg. Co.	—
Rebuilt Elect Equip. Co.	44
Reliable Electric Co.	—
Remington-Rand, Inc.	—
Rhodes & Sons, M. M.	—
Runzel Cord & Wire Co.	—
Schauer Mfg. Co.	—
Sherron Metallic Corp.	—
Signal Engineering & Mfg. Co.	—
Sloan, Cook & Lowe Co.	43
Seymour Smith & Son, Inc.	—
Southern Pine Lumber Co.	—
Stromberg-Carlson Co.	2-3, 38, 39
Suttle Equipment Co.	45
Taylor-Colquitt Co., The	—
Tel-E-Lect Products, Inc.	—
Telectric Co., The	—
Telefon Fabrik Automatic	—
Telephone Construction, Inc.	45
Telephone Engineering Corp.	45
Telephone Repair and Supply Co.	44
Tele-Wire Supply Co.	44
Telkor, Inc.	—
Templeton-Kenly Co.	—
Termite Drills, Inc.	—
Tilden Tool Mfg. Co.	—
United States Motors Corp.	—
United States Steel Corp. American Steel & Wire	—
United States Steel Corp. (Coal Chemical Div.)	—
Utica Drop Forge & Tool Corp.	—
Vulcan Electric Corp.	—
Wall Mfg. Co.	—
Weller Electric Corp.	—
Weller, G. Louis	—
Western Electric Co.	—
Weston Electrical Instrument Co.	—
Whitney Blake Co.	—
Williams Inspection Co., A. W.	45
Wilton Electric & Telephone Construction Co.	45
The Wiremold Co.	—

SLASH SERVICE INTERRUPTIONS!



Install . . . General Cable PRESSURE-TESTED CABLE

Use cable made by General Cable—and forget service interruptions! The sheath of every length of this cable is *pressure-tested* against trouble-causing leaks, just before shipping. Cable available in all standard gauges and number of pairs. "Unit" design of large sizes groups the pairs, speeds splicing, saves money. Order General Cable *pressure-tested* cable—proved by 50 years of dependability.

Manufactured for

AUTOMATIC ELECTRIC

Originators and Developers of the Strowger Step-by-Step "Director" for Register-Sender-Translator Operation . . . Machine Switching Automatic Dial Systems
Makers of Telephone, Signaling and Communication Apparatus . . . Electrical Engineers, Designers and Consultants

Distributors in U. S. and Possessions: Automatic Electric Sales Corporation
Export Distributors: International Automatic Electric Corporation
1033 West Van Buren Street, Chicago 7, U. S. A.

THIS *Nicopress* SLEEVE

plus

THIS *Nicopress* 17-2 TOOL

Make better pair splices faster than you've ever made them before!

Ask Your Jobber

THE NATIONAL TELEPHONE SUPPLY COMPANY

The National Telephone Supply Company

5100 SUPERIOR AVENUE • CLEVELAND 3, OHIO

Canadian Mfr. — N. SLATER CO., LTD., HAMILTON, ONT., CANADA

Export Distributor — INTERNATIONAL STANDARD ELECTRIC CORP., NEW YORK, N. Y.

Nicopress is the Registered Trade Mark of The National Telephone Supply Company